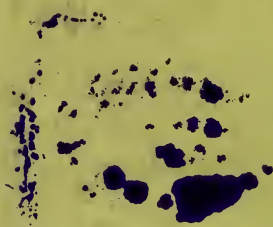


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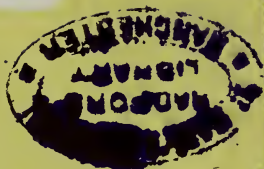
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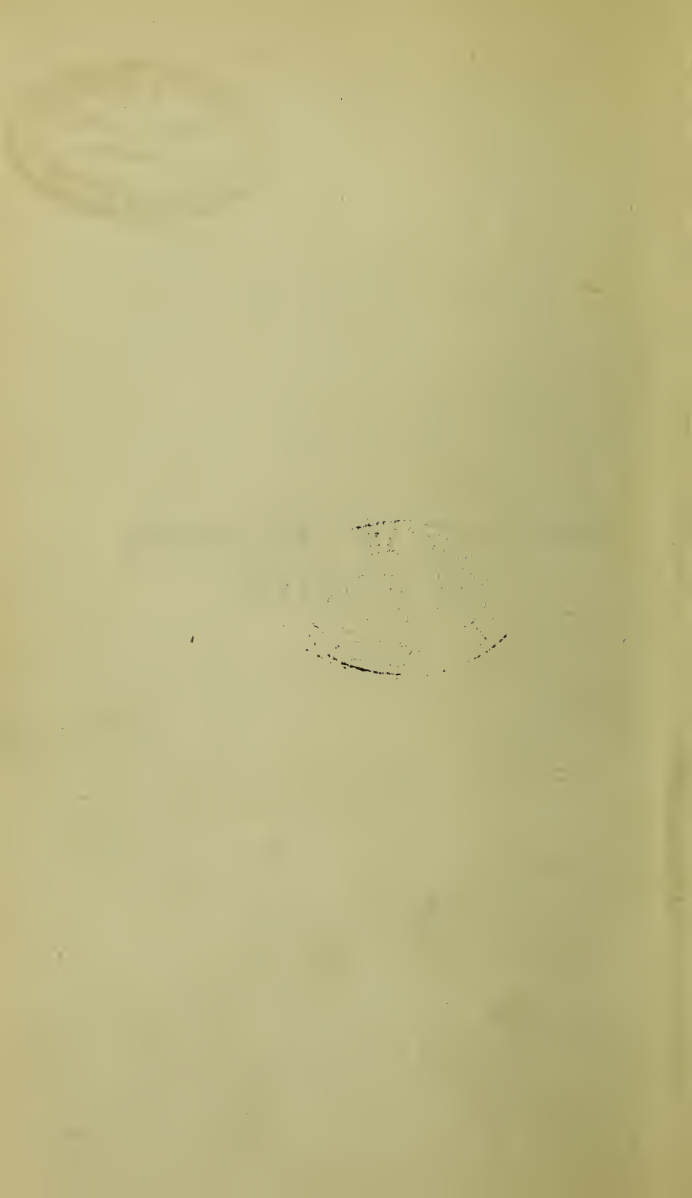




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HANDBOOK OF MIDWIFERY
FOR MIDWIVES



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HANDBOOK OF MIDWIFERY FOR MIDWIVES

FROM THE

Official Handbook of Midwifery for Prussian Midwives
(*Lehrbuch der Geburtshülfe für die Preussischen Hebammen*)

PUBLISHED BY DIRECTION OF THE

MINISTER FOR SPIRITUAL, EDUCATIONAL, AND
MEDICAL AFFAIRS.

BY

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SECOND



EDITION.

LONDON:

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PREFACE TO THE SECOND EDITION.

IN revising this work, it seemed desirable, for reasons which will perhaps be sufficiently obvious, to give it more the character of an English work, and less that of a German one done into English. A few trifling alterations have, therefore, been made in the text, and some omissions, but none that have not been motived by the consideration that the aim of the work should be to teach English midwives how they themselves must act, rather than the course prescribed for German midwives. A small number of notes have been added, which are distinguished from the text by being placed within brackets.

No liberties have been taken with the main body of the work, which remains as it did in the former issue. The testimony of the Medical and Scientific Press as to its merits as a teaching manual, which has been supported by the fact of its retranslation into another language (the Portuguese), led to the conviction that any material alterations would be unwise. From these the translator has therefore refrained.

LIVERPOOL, *Sept.* 1884.

P R E F A C E .

AFTER a Commission of Experts, called by the Royal Ministry in the autumn of 1873, had declared a new Handbook of Midwifery for the use of midwives to be proper and desirable, the Royal Ministry, on the proposition of the Commission, charged Professor Litzmann, Director of the School for Midwives and of the Lying-in Institution of Kiel, with the composition of the work. His task having been accomplished, the work was communicated to the other members of the Committee at several sittings, and, together with revision notes drawn up by the various members of the Committee, was deliberated upon. The number and choice of the illustrations to be inserted in the work were determined, and the revision notes, as far as they met the approval of the Committee, were handed over to the author for use during the final revision of the work. The Committee had laid down the principle that midwives should really be educated with a view to skilled observation and attendance, and that their operative interference should be limited to the smallest possible amount. But insurmountable

difficulties prevented the complete carrying out of this principle at the time. The Royal Ministry had required the collected provincial Governments, after hearing the Kreis-Physikus, or district medical officer, to report on the degree of authority needful to a midwife in the practice of her calling. From the answers given in, it acquired the conviction that in a not inconsiderable number of country districts, on account of the scanty supply of medical men, and the want of means of communication, medical assistance during labour was either not procurable at all, or with such a loss of time that the patient was frequently left to the sole care of the midwife; and that, this being so, in such cases of need the midwife should be allowed authority to make use of operative treatment within certain limits. For the future, therefore, in certain conditions which will be mentioned more particularly in the Handbook, the midwife will be permitted in footling cases not only to free the arms, draw down the head and extract it from the pelvis, after the child is born as far as the breast, but if the navel cord is down at the same time, and the pulsation in it is becoming weaker and slower, she is to draw down the child by the feet before the hips are born; moreover, in cross births she is to turn the child by the feet. Finally, after the birth of the child, if the hæmorrhage threatens to be dangerous, and it cannot be stopped by any other means, she is to separate and remove the placenta herself. But this authority, duly allowed to the midwife in a case of

necessity, in no wise releases her from her first duty of informing herself, in every case of labour, as early as possible, by careful and accurate examination, as to the possible presence of some irregularity, and of insisting with all earnestness on a medical man being sent for in every case in which the Handbook gives directions to that effect.

In towns, as well as in more thickly populated country districts, where the means of communication are sufficient, the midwife, if she performs her duty conscientiously, will almost always be able to procure timely medical assistance, and she would therefore take a grave responsibility upon herself by bringing herself into the position of being obliged personally to operate in place of a medical man. Moreover, in those districts where it will appear doubtful beforehand whether medical aid can be procured at all, or in proper time, the midwife must never delay to send for a medical man (relying on the authority given to undertake the management herself, in case of need), but on the contrary she must be the more diligent to find out any irregularity as early as possible.

TRANSLATOR'S PREFACE.

WHAT in Germany is undertaken by the State is in our own country left to private enterprise as far as relates to the education of Midwives.

In offering an English version of the official Handbook of Midwifery for Prussian Midwives (*Lehrbuch der Geburtshülfe für die Preussischen Hebammen*) to the public, I do it with the conviction that there is room for it, and that it will help to supply a great and long-needed want. I venture to hope that it will prove useful not only to the class for whom it is more immediately intended, but also to such students and practitioners as may honour me by looking into it.

In the United Kingdom, at any rate, those cases will be extremely rare in which it will be the duty of the midwife to perform obstetric operations herself; but as such most certainly will occur, especially in thinly populated districts, every thinking person must acknowledge that the midwife ought to know how to save life in such extremities.

The present translation was nearly completed at the date of publication of a recent English work on

the same subject, and since that time attentive observation has led me to think that there is still a field of usefulness open before it.

My best thanks are due to His Excellency the Prussian Minister for Spiritual, Educational, and Medical Affairs, for permission to translate the work and to make use of electrotypes casts of the original plates, and also to my friend Herr Pastor Hartmann, of this city, for his kindness in reading over nearly the whole of the work with me.

LIVERPOOL, *Oct.* 1880.

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HANDBOOK

OF

MIDWIFERY FOR MIDWIVES.

PART I.

INTRODUCTION.

§ 1.

It is the duty of the midwife, not only to give the necessary help to the woman in labour, but also to assist by her advice during pregnancy; and, after the birth of the child, to see that the first duties are performed to the mother and new-born infant, in part personally, and in part by directing and overlooking.

The midwife is, however, authorised to take sole charge only when the course of the above-mentioned processes is regular. She must, therefore, seek to recognise every irregularity as early as possible, so that the assistance of a medical man may be procured in time.

In order to obtain a correct understanding of pregnancy, labour, and childbed, however, it is absolutely necessary to have some knowledge of the anatomy (structure) and functions of the human body in general, and of the female in particular; but above all, a knowledge of the female organs of generation.

SECTION I.

*STRUCTURE AND FUNCTIONS OF THE HUMAN
BODY IN GENERAL.*

§ 2.

The body is composed of hard, soft, and fluid portions. The hard portions are the bones, which in some places are surrounded by the soft parts—the flesh; and in others, in conjunction with the flesh, form the cavities which contain the internal organs. The bones, therefore, principally decide the shape of the body, and taken altogether are called the skeleton. They are either united together immovably or attached to each other by joints which allow motion. The ends of the bones which form part of a joint have a smooth covering of cartilage, or gristle, and are surrounded by sinewy bands, which keep them in proper position. Movements are caused by the action of the muscles. These are red, fleshy bundles, which run from one bone to another. They are of various shapes, and run in various directions. When these bundles draw up and shorten themselves, the bones to which they are fastened are moved towards each other.

The whole surface of the body, with the exception of a few openings, is covered with skin, and underneath this a layer of fat is spread out like a cushion. In some places the skin is overgrown with hair, and at the ends of the fingers and toes it produces the nails.

§ 3.

From its outward form the body is divided into head, trunk, and limbs.

§ 4.

The head consists of the skull and the face. The bones of the skull, which in earliest infancy are separate, and joined together loosely, become firmly united in later life, in parts even grown together, and form a bony case, which encloses the brain. The

bones of the face are immovably united together from birth, with the exception of the lower jaw, which is connected to the temple-bone by a joint.

§ 5.

The trunk we divide into neck, chest, and belly or abdomen. The bony framework of the trunk is principally formed by the spinal column or backbone, and the pelvis. The spinal column consists of twenty-four pieces called *vertebræ*; seven of these belong to the neck, and are called *cervical* *vertebræ*; twelve to the back, called *dorsal* *vertebræ*; and five to the loins, called *lumbar* *vertebræ*. The *vertebræ* are bony rings, provided with pointed *processes* or offshoots; these rings are placed one upon another, and united together in such a manner, by joints and cartilaginous or gristly surfaces, as to be movable one upon another. They thus form a flexible canal running from the cavity of the skull downwards, and containing the spinal cord or marrow. The upper *cervical* *vertebra* is also united to the skull by a joint. To each of the twelve *dorsal* *vertebræ* a rib is attached on the right and on the left, in such a manner as to allow some movement. These twelve ribs of each side are curved forwards into an arch, and (the two lower on each side excepted) are united by cartilage to the breast-bone, or *sternum*, which lies in the middle line in front. By the union of these parts the chest or *thorax* is formed. Below the *lumbar* *vertebræ*, the downward continuation of the spinal column forms the *sacrum*, as the broad bone behind the hips is called, and the *coccyx*, or little rump bone. These two bones, by their union with the two hip-bones, form a large bony ring called the *pelvis*. The principal contents of the chest are the heart, the great blood-vessels, and lungs. The cavity of the chest is separated from that of the abdomen by a fleshy-ligamentous division-wall called the *diaphragm*, or midriff. The cavity of the abdomen, which runs downwards directly into the pelvis,

is bounded behind by the vertebral column, but at the sides and in front, only by soft parts,—the muscular abdominal walls. The muscles unite in front, in the middle of the abdominal wall, in a stripe called the white line, or *linea alba*. A sunken scar is seen on the skin covering the abdomen—the navel (see § 141). In the cavity of the abdomen are the organs of digestion and of excretion, or separation of urine. Of the pelvis, its cavity and contents, we shall speak more in detail further on.

§ 6.

The limbs are divided into upper and lower. The upper, or arms, are united to the shoulder-blades by a joint at the upper part of the chest. The shoulder-blade is a flat three-cornered bone, lying behind or upon the posterior surface of the chest, near the spinal column; the collar-bone, attached by loose joints, at one end to the upper part of the shoulder-blade and at the other to the breast-bone, thus connects the two together. In each arm we distinguish the *upper arm*, which contains but one bone; the *fore-arm*, which contains two bones—the *radius*, running up the arm on the thumb side, and the *ulna*, on the opposite side; and the *hand*, consisting of the wrist, the mid-hand, and the fingers. The lower limbs, or legs, are intended to carry the trunk. The thigh-bone of each side, by its ball-joint, fits into a socket on the outer surface of the hip bone, called the *acetabulum*. In the knee-joint, the thigh-bone is united to the two leg bones—the thick shin-bone, or *tibia*, and the thin splinter-bone, or *fibula*. Besides this, in the front part of the joint there are round flat bones—the knee-pans. In the foot we distinguish, the same as in the hand, the *ankle* with the heel, the *mid-foot*, and the *toes*.

§ 7.

During life, the constituent parts of the body experience a constant wearing out by use. The worn-out materials are being constantly separated by organs

adapted to the purpose, to be constantly replaced by new. Compensation for this wear-and-tear is made partly by the taking-in of food and partly by breathing. Food is first taken into the mouth, and here prepared by chewing and mixing with *saliva*, or spittle. It afterwards passes through the *œsophagus*, or gullet, a skinny or membranous tube descending in front of the spinal column, through the midriff and into the *stomach*, which lies in the middle and upper part of the abdominal cavity. Here digestion begins, by the action of the *gastric juice*, or juice of the stomach. The fluid food-pulp, thus changed, is now driven by the movements of the stomach into the *duodenum*, or twelve-finger gut, where the juices of the gut, and of the intestinal glands, and the gall from the gall-bladder, are mixed with it. The gall is prepared by the liver, which lies in the abdominal cavity to the right of the stomach. The pulp is then driven into the small intestines, where its conversion into *chyle* is completed by the action of the intestinal juices. This chyle is sucked up by the absorbent vessels as it passes along, and is conveyed by them into the great blood-vessels of the chest, and thence into the heart. The remaining undigested portions of the food pass on into the *colon*, or large intestine, and are then emptied out of the body, as dung, by the rectum.

§ 8.

The blood is brought into contact with the air around us by breathing. As the chest expands by inspiration—or drawing-in of the breath—the air passes through the openings of the mouth and nose, into the *trachea*, or windpipe, which lies in front of the gullet, and thence into the bronchial or air tubes, thus filling the lungs. The dark red blood streaming hither from the heart takes up oxygen from the air, which gives it a bright red colour, and gives in exchange watery vapours and carbonic acid, which escape

from the lungs in expiration. Oxygen is just as necessary for the maintenance of life as food.

§ 9.

The *blood* is the fluid which is constantly carrying the material needed for the nourishment of the various parts of the body to their destination, and at the same time carrying off the material which has become useless in consequence of their activity. It flows out from the heart through membranous tubes—the arteries which beat or pulsate with the heart. These vessels, as they branch more and more, force their way into every part, until at last, little by little, the minuter branches take an opposite direction (become veins), and unite into larger ones within which the blood streams back again into the heart. The *heart* is a hollow muscle, lying in the cavity of the chest between the two lungs. In healthy grown-up people, it contracts or beats from seventy to eighty times a minute, and by means of this contraction drives the blood through the vessels. It is divided into a right and a left half by a division-wall. The vessels running off from the left side of the heart carry the bright red blood, which has been freshened by passing through the lungs, into the various parts of the body. They are called *arteries* because they were formerly believed to contain air, or vital spirit. In the minutest branches of the arteries, where the mutual interchange of material takes place, the blood loses its bright red colour, and becomes dark red. In this condition it returns to the right side of the heart, just after it has received the chyle, which has been elaborated from the food. The contractions of the right heart drive the dark blood into the lungs through its arteries, and it is in the minute branches of these that it regains its bright red colour. From here it passes back into the left heart, through the *pulmonary* veins, or veins of the lungs, to again commence its course through the body.

§ 10.

The separation from the blood of material that has been used, or is no longer usable, takes place, as we have seen, in part in the lungs, by the escape of carbonic acid gas and watery vapour. A similar watery evaporation is constantly taking place from the skin, sometimes to a greater, sometimes to a less extent. Under certain circumstances, water in a fluid form (sweat) is also given off. Amongst the most important separating or excretory organs are the *kidneys*, which lie in the upper and back part of the abdominal cavity, close to the vertebral column. They separate the urine from the blood; after separation it passes through two thin membranous tubes—the *ureters*—into the *bladder*. This organ is provided with a muscular covering; and when the urine has collected to a sufficient quantity, the contraction of this drives it out through the urinary passage, or *urethra*.

§ 11.

As the arteries branch out from the heart, so in like manner do the nerves branch out *from the brain and spinal marrow*, as cords or threads, composed of delicate fibres. These pass into every part of the body, and keep up the communication between the distant and central parts. Through these *the muscles receive from the brain and spinal cord the stimulus or impulse to contraction*, by which movements are made. On the other hand, other fibres or cords, carrying the impressions received from without, *run to the brain*, where they reach us as sensations. For special sensations, there are special provisions—the organs of sense, which are in immediate connection with the brain; namely, the eyes for seeing, the ears for hearing, the nose for smelling, the tongue for tasting. The sense of feeling is present all over the body, with the exception of the hair and nails, which are not provided with nerves of sensation. Sensation is most delicate

at the finger ends. A sharp irritation of the nerves of sensation, by pressure, tearing, or the like, causes pain.

SECTION II.

THE STRUCTURE AND FUNCTIONS OF THE FEMALE BODY IN PARTICULAR.

§ 12.

The female body is distinguished from the male, not by the difference of the genital organs alone. The height of the body is usually less, the structure of the bones is finer, the muscles are weaker, the limbs are rounded off more softly, by a greater development of the cushion of fat beneath the skin. The shoulders are narrower, the hips wider, the cavity of the chest smaller, the abdominal cavity more roomy. On the whole *the pelvis* is modelled alike in both sexes, except that that of the female is distinguished by its lesser depth and greater width. As the greater part of the genital organs lie within the pelvis, and as in labour the child must pass through it, it is of very great importance in relation to pregnancy, and particularly in regard to labour. The female pelvis therefore belongs to, if it is not one of, the sexual parts concerned in labour.

In the following descriptions the midwife must think of the body as standing upright, and understand the terms "above," "below," "before," "behind," accordingly.

CHAPTER I.

THE FEMALE PELVIS.

§ 13.

THE mature female pelvis is formed, as we have already seen, of four bones—the sacrum, coccyx, and the two hip bones.

§ 14.

The sacrum forms the back or posterior wall of the pelvis. It has a three-cornered or wedge-shaped form, is broader and thicker above, becomes narrower and thinner below, and ends in a blunt point. The

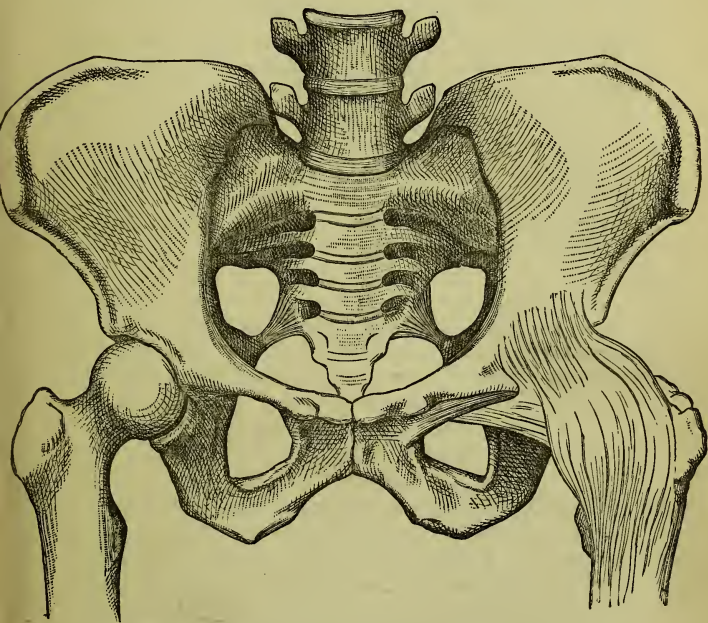


Fig. 1. The female pelvis, showing its connection with two lumbar vertebræ and the thigh-bones.

posterior surface is arched, and shows a middle and two side rows of elevations, of which the middle one is the most marked. The smooth anterior surface is hollowed out, as well from above downwards, as also, but to a lesser degree, from side to side.

On both surfaces four to five pairs of holes are

observed, through which nerves pass. These nerves come from a canal inside the bone, which is a continuation of that of the spinal column.

In childhood the sacrum consists of five separate bones, which are called false vertebræ, and which at a later period grow together. This separation in childhood can still be recognised by four bony ridges, which run across the sacrum between the holes. The sacrum is united to the adjoining bones by joint-surfaces, covered by cartilage and held together by bands or ligaments—namely, above to the vertebral column, on the two sides to the hip bones, and below to the coccyx. The point of union to the last loin or lumbar vertebra projects over the hollow of the anterior surface of the sacrum, and is on this account called the *promontory*.

§ 15.

The coccyx is the downward continuation of the sacrum, and commonly consists of four little vertebræ, which decrease in size from above downwards. The vertebræ are attached to each other and to the sacrum so as to admit of some degree of movement.

§ 16.

The hip bones, or *ossa innominata*, lie at each side of the sacrum, to the upper part of which they are attached by a joint, or articular surface, the attachment being rendered almost immovable by very strong and tense bands or ligaments. These joints are called the *sacro-iliac articulations*. As the hip bones bend outward from this point, then turn inwards again, and unite in the middle line in front, opposite the promontory, the pelvic bones thus form a ring. The very firm articulation of the two anterior ends of the hip bones to each other is called the *pubic articulation*.

§ 17.

In childhood, the hip bone, or *os innominatum*, is

made up of three separate pieces: the *ilium*, the *ischium* (or bone we sit on), and the *os pubis*, or, as the Germans call it, the womb-, or lap-bone. These meet together to form the *acetabulum* (see § 6), or cavity which contains the round head of the *femur* or thigh-bone. Here the three are joined together by cartilage. They grow together so as to become one bone about the time of puberty.

The largest of these three pieces is the *ilium*. It lies principally behind and above, forming the upper side wall of the pelvis, and is joined to the sacrum in the manner we have already stated. It is a broad, flat bone, hollowed out a little on the inside. Upon its inner surface the lower thick part appears to be separated from the upper thinner portion by a rounded-off ridge—a part of the *ilio-pectineal line*. Its upper free border, which can be plainly felt at the hips, is called the crest. It ends, both back and front, in a projection, the *anterior* and *posterior iliac projections*. The posterior one of each side projects backwards, over the posterior surface of the *sacrum*.

§ 18.

The *ischium* lies just beneath the *ilium*, and forms the lower side wall of the pelvis. It has a broad part, descending from the *acetabulum*, called the descending *ramus*, or branch. On the posterior border of this *ramus*, the *spine* of the *ischium* projects backwards and inwards. The bone ends below in a rough, thick part called the tuberosity of the *ischium*, upon which the weight of the body principally rests in sitting. From the tuberosity the smaller ascending *ramus* passes forwards, inwards, and a little upwards, in the direction of the *pubic joint*, or articulation. About one-third the distance between the tuberosity of the *ischium* and the *symphysis pubis*, as the *pubic articulation* is also called, it changes its name, and becomes the *descending ramus* or branch of the *pubis*. Above the *spine* of the *ischium*, between this and the *ilium*,

is the greater ischiatic notch, a space covered over by soft parts. From the spine of the ischium, and also from the tuberosity of each side, a strong band or ligament passes to the edge of the sacrum, by means of which the pelvic bones are more firmly bound together.

§ 19.

The womb-, or pubic bone, projects the most forward, and by its union with the bone of the opposite side forms the front wall of the pelvis. The upper part is called the *horizontal ramus*, or branch. It extends from the acetabulum to the symphysis pubis, and the ridge on the upper border of it is called the *crest* of the pubes. From the symphysis the descending ramus passes down to become the *ascending one* of the ischium. The lower border of the symphysis, the descending branches of the pubes, and the ascending ones of the ischium, form the pubic arch. Between the branches of the ischium and of the pubes there is an egg-shaped opening covered by a sinewy membrane. This goes by the name of the *oval opening*.

§ 20.

The pelvis, internally, is wide above and narrower below. Hence it is divided into the false, or greater pelvis, and the true, or lesser. If the "pelvis" simply is spoken of, the true pelvis is meant. The true is separated from the false pelvis by a line running through the promontory of the sacrum, continued on each side along the ilio-pectineal line and the crest of the pubis, and ending at the symphysis.

§ 21.

The false pelvis is widest above, and becomes narrower below. It has a bony boundary behind and at the sides only: behind, the lowest lumbar vertebra; and at the sides, the two hip bones. It is closed in, in front, by the soft abdominal walls, and it is the

stretching-out of these walls that gives the needful increase of space during pregnancy.

§ 22.

The true pelvis is a short, wide canal, hollowed out behind, the back wall of which is the highest, and the front the lowest. We distinguish in it the *inlet*, the *cavity*, and the *outlet*.

The *inlet* is the upper opening, which is identical with the line that separates the true pelvis from the false. In a well-formed pelvis, the inlet or *brim* (as it is also called) presents the appearance of an obliquely placed oval, bent in a little at the promontory behind.

The *outlet* is the lower opening, and the bones which surround it are the coccyx, the tuberosities of the two ischia, and the bones forming the pubic arch. Its form is liable to change, owing to the movability of the bones of the coccyx.

The *cavity* of the pelvis lies between the brim or inlet and the outlet, and upon the whole is somewhat wider from back to front than from side to side, and widest in the middle.

§ 23.

The midwife must carefully note the various diameters of the pelvis—that is, the distances of opposite-lying bones from each other. In the false pelvis the distance between the upper spines of the two hip bones is $9\frac{1}{3}$ inches.

A knowledge of the diameters of the true pelvis is particularly important to the midwife; for by means of this she is enabled to understand how a child can pass through a pelvis of ordinary width, and what a hindrance to labour a narrow pelvis is. In a well-built female pelvis the following diameters are noted:—

In the pelvic inlet—

1. The antero-posterior, or conjugal diameter, to be called the *direct* diameter (that is, from the middle of the promontory of the sacrum to the upper border of the symphysis pubis), is $4\frac{1}{3}$ inches.

2. The transverse, to be called the *cross* diameter (that is, from the most bowed-out point of the ilio-pectineal line of one side to the corresponding point on the other), $5\frac{1}{2}$ inches.

3. The oblique (that is, from the sacro-iliac joint of one side to the horizontal branch of the pubes of the other, just above the egg-shaped hole), $4\frac{3}{4}$ inches.

The diameter reckoned from the right sacro-iliac joint to the left branch of the pubes is called the right oblique diameter, and that from the left sacro-iliac joint to the right branch of the pubes, the left.

In the widest part of the pelvic cavity the *direct* diameter from the greatest bulging-out of the sacrum—that is, from the third sacral vertebra to the middle of the symphysis pubis—measures from $4\frac{3}{4}$ to $5\frac{1}{2}$ inches.

The cross diameter, from the back part of the acetabulum (in front of the spine of the ischium and above it) of the one side to the same part of the other side, from $4\frac{1}{4}$ to $4\frac{1}{2}$ inches.*

In the lower part of the pelvic cavity, the direct diameter from the tip of the sacrum to the lower border of the symphysis pubis measures from $4\frac{1}{4}$ to $4\frac{1}{2}$ inches, the cross diameter between the spines of the ischia $4\frac{1}{10}$ inches.

In the pelvic outlet the direct diameter from the tip

* “An average struck from the combined observations of Duncan Burns, Munro, Meckel, Watt, Velpeau, Moreau, Boivin, Baudelocque, Ramsbottom, Rigby, and Wood, gives us the following results.”—*Dr. Tyler Smith*.

	Direct.	Cross.	Oblique.	
Brim . . .	4.25	5.2	4.8	} inches.
Cavity . . .	4.7	4.75	5.2	
Outlet . . .	5.	4.2		

“A System of Midwifery,” by W. Leishman, M.D., 1873, gives the following dimensions:—

	Direct.	Cross.	Oblique.	
Brim . . .	$4\frac{1}{2}$	$5\frac{1}{4}$	5	} inches.
Cavity . . .	$5\frac{1}{4}$	5	$5\frac{1}{4}$	
Outlet . . .	5	$4\frac{1}{4}$	$4\frac{3}{4}$	

of the coccyx, as usually pushed back during labour, to the lower edge of the symphysis pubis, $4\frac{1}{3}$ inches. The cross diameter between the tuberosities of the two ischia is the same.

§ 24.

The depth of the pelvic walls also is to be considered. From the promontory of the sacrum to the tip of the coccyx is $5\frac{1}{3}$ inches; the depth of the side walls from the ilio-pectineal line to the tuberosity of the ischium is $3\frac{1}{2}$ inches; and from here the depth gradually diminishes until it is only about $1\frac{1}{3}$ inch at the symphysis pubis.

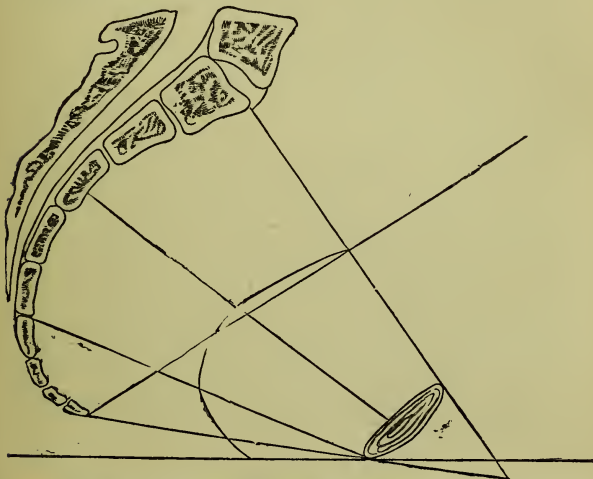


Fig. 2. Perpendicular section of the female pelvis, showing the axis of the pelvis and its curves.

§ 25.

Moreover, the *direction* of the canal is important. This is shown by the *axis* of the pelvis. By the term *axis* is meant a line so drawn through the pelvis, from

the inlet to the outlet, as to be everywhere midway between the front and back walls, thus passing exactly through the centres of all the direct diameters. Naturally, it is not a straight but a curved line, as it must follow the curves of the sacrum and coccyx. The child and the after-birth pass into the world in the direction of this line, and the hand, every time it is introduced into the genital passage, must take the same direction.

§ 26.

Finally, the position of the pelvis in relation to the surface of the earth, or *inclination*, is to be considered. By means of the sacrum the whole pelvis is attached to the vertebral column, in such a manner that the sacrum diverges backwards from the line of the spine, and the point of union of the upper sacral and lower lumbar vertebræ forms, as we have seen, an angular projection forwards.

In the upright position of the body, therefore, the pelvic ring slopes forwards, the symphysis pubis is on a lower level than the promontory of the sacrum, the pelvic inlet looks forwards and a little upwards, the pelvic outlet downwards and a little backwards. It is easy to see that this slope of the pelvis varies with the position of the body. If a woman sits leaning far back, the pelvic inlet will look directly upwards, and the outlet downwards and forwards; if she lies flat on the back, the inlet will look upwards and backwards, and the outlet directly forwards.

§ 27.

In the living body the form of the pelvis suffers a slight change by the upper part of the sacro-iliac articulation or joint, and the last segment of the ilio-pectineal line of both sides being covered by the large round loin muscle—the *psoas muscle*. On the inside of this muscle run the large iliac artery and vein, which descend by the side of the fifth lumbar vertebra,

and here divide into a branch for the pelvis and another for the leg. These parts, therefore, are subject to pressure from the child during labour and often during pregnancy.

CHAPTER II.

THE FEMALE SEXUAL ORGANS.

§ 28.

The *female sexual* organs lie, for the most part, in the pelvic region, some near to, and some within the pelvis. They have therefore been divided into *external* and *internal sexual organs*. The *breasts* also are part of the female sexual organs.

1. *External sexual organs.*

§ 29.

The pelvic outlet, with the exception of the two openings of the *seat* and of the *genital fissure* (called the *vulva*), is closed in by soft parts, which, together with the movable coccyx, form the yielding floor of the pelvic cavity. The openings mentioned lie in the middle line—the seat-opening behind, about one inch in front of the tip of the coccyx; the vulva in front, beneath the symphysis pubis. The fleshy part of the floor of the pelvis, lying between the seat, or *anus*, and the vulva, is called the *perinæum*. It is of an average length, from before backwards, of $1\frac{1}{8}$ to $1\frac{5}{8}$ inch, and gradually becomes thinner towards the vulva. In labour it is often stretched to double this length, and even more.

§ 30.

Before the symphysis pubis, the skin is raised above that of the surrounding parts by an underlying fatty cushion. This prominence, which about the time of puberty becomes grown over with hair, is called the *mons veneris*. Two rounded folds of skin run out from the mons veneris, called the *labia majora*, or *greater folds* or *lips*. They extend down towards the

perinæum, on the front border of which they are united together by a thin transverse band, called the *fourchette* or *fork*. These bound the genital fissure on both sides. Their outer surface is hairy in grown-up people, like the *mons veneris*, but the skin of the inside is softer, smoother, and more moist. From this part, and usually covered by the greater folds, two thinner, shorter, and lower folds of mucous membrane arise, called the *labia minora*, or *lesser folds*. The skin covering them is a moist membrane called a *mucous membrane*. They pass upwards as two little folds, one on each side, and in the upper corner of the genital fissure surround a little round projection about the size of a pea. This is the *clitoris*, which is here attached to the pubic arch. The space between the two lesser folds (*nymphæ*) is called the *vestibule*. If the nymphæ are drawn aside, an opening will be seen, surrounded by a raised border; this is the opening of the *urethra*, or urinary passage. It lies in the upper wall of the vestibule, about two-thirds of an inch behind the clitoris. Further upwards and backwards is the entrance to the genital passage, or *vagina*, which in virgins is closed by a thin membrane with a small opening in it. This membrane, called the *hymen*, is usually torn during the first attempts at intercourse; in rare instances, however, it remains till labour. When this has been torn, some small fleshy projections are found, which are supposed to be remains of it.

2. *Internal sexual organs.*

§ 31.

The genital passage, or *vagina*, is a membranous and highly dilatable tube, lined with mucous membrane. It serves to connect the *vulva* with the womb. In front of the vagina lies the *urethra*, or urinary passage, $1\frac{1}{8}$ to $1\frac{5}{8}$ inch long; and higher up, the bladder. Behind it lie the perinæum and lower bowel, or *rectum*, which descends into the pelvis, to the left of the promontory of the sacrum, following at the same

time the sacral curve. We speak of the vagina as having a front and back wall, which in its empty state lie close to each other. The front wall is shorter than the back. Upon both walls, in the middle line, a ridge runs lengthwise; it is thickest, however, on the front wall and at the lower part; from this other



Fig. 3. Perpendicular section of the female pelvis, showing its contents in position. The red line shows the line of peritoneum.

thick ridges or folds pass transversely towards each side. After frequent intercourse, and especially after pregnancy and childbirth, the walls of the vagina become softer, smoother, and more flabby. The narrowest part of the vagina is the entrance, and this is

surrounded by a muscular ring. The upper, wider part, which encircles the neck of the womb, is called the dome or *vaginal arch*. From the position of the neck of the womb we speak of a *front* and a *back*, a *right* and a *left, vaginal arch*.

§ 32.

The womb, or *uterus*, is a hollow muscle with thick walls. It lies behind the bladder and in front of the rectum (descending from the left), and about the middle of the pelvis, so that the upper end is a little below the pelvic inlet. The womb in its unimpregnated state has very much the shape of a flattened pear, with the narrow end pointing downwards.

We describe it as having a front and back wall and two borders. The upper part is called the *fundus* or base, the middle portion the *body*, and the thin lower part, which is enclosed by the vagina, is called the *cervix* or *neck*. The lowest part of the neck, about half an inch in length, and lying free in the vagina, is called the *vaginal portion*.

The part of the cavity of the womb which is enclosed by the fundus and body has a three-cornered shape, and is flattened from before backwards. Downwards it is smaller, and is called the *canal of the neck of the womb*, or *cervical canal*. The narrowest point where the cavity of the body joins the cervical canal is called the *internal mouth* of the womb, or *os internum*.

At the lower end of the *vaginal portion* the cervical canal opens into the vagina by a transverse opening, which is called the *external mouth* of the womb, or *os externum*. The cleft running from side to side thus has an anterior and posterior lip. The anterior lip reaches lower down than the posterior, although the latter is the longer. This occurs through the posterior vaginal dome being attached to the neck of the womb at a higher point than that in front. The mucous membrane of the vagina is continuous with that of the vaginal

portion of the neck, and this is prolonged through the mouth of the womb into that of the neck and cavity of the uterus.

§ 33.

The womb lies in a transverse fold of the peritoneum, a very delicate, smooth membrane that covers nearly all the contents of the abdominal cavity. Upon the posterior wall of the uterus, the covering of peritoneum extends downwards over the neck of the womb to the upper part of the vagina, whence it again passes upwards along the front wall of the *rectum*. The pocket thus formed between the uterus and the rectum (called *Douglas's pouch*) is bounded on the sides by two folds of peritoneum, the *utero-sacral ligaments*, which run from the posterior surface of the cervix uteri to the sides of the rectum. Within these run tender, fleshy cords, which attach the cervix to the posterior wall of the pelvis. On the anterior surface of the uterus the peritoneum only reaches down to the internal os uteri, whence it passes upwards over the posterior wall of the bladder. The anterior wall of the cervix, below the peritoneum and above the attachment of the vaginal dome, is fastened to the lower and back part of the bladder. On both sides of the womb, the above-mentioned folds of peritoneum are extended to the side walls of the pelvis. These folds, passing from the sides of the womb, are called the *broad ligaments* of the uterus. Within these, a round, fleshy cord runs from the base of the womb between these folds, outwards and forwards, and passing through an opening in the abdominal walls, beneath the skin (*the inguinal ring*), to the outer surface of the pubes, is attached there. This cord is called the *round ligament*.

The uterus is kept in position near the upper part of the axis, or middle line of the pelvis, by these bands and ligaments—namely, partly by the broad and round ligaments, partly by the utero-sacral liga-

ments, as well as by the attachment of the front of the cervical wall to the bladder, and finally in part by the vagina, which encircles the cervix, the vagina in its turn being supported by its ligamentous attachment to the inner wall of the pelvis. These attachments allow a considerable amount of movement, upwards and downwards, according to the greater or less pressure of the intestines, as well as backwards and forwards, as the constantly changing fulness of the bladder and rectum requires.

§ 34.

In the upper edge of the broad ligaments, two thin membranous tubes pass from the fundus of the womb towards the sides of the pelvis. These are called the ovum conductors, or *Fallopian tubes*. The inner end of these tubes opens through a narrow orifice into the upper part of the cavity of the uterus; the outer, which is funnel-shaped, and surrounded by a fringe, lies free in the abdominal cavity. Moreover, in the folds of the broad ligaments, a little behind and below the middle portion of the Fallopian tubes, lie the *ovaries*, or egg-cases, one on each side of the uterus. They are two almond-shaped bodies, about the size of a pigeon's egg, and they contain numerous little bladders in which the eggs, or *ova*, are developed. The arteries also which convey the blood to the internal genital organs, and especially to the uterus, and the veins which convey it back again, run in the folds of the broad ligaments.

§ 35.

In childhood, the genital organs take part in the nourishment and growth of the body generally, but no special activity is perceptible in them. But a change takes place, usually about the fifteenth year—often sooner, however, and often later. The girl arrives at puberty. She gives outward evidence of this change in the growth of hair on the mons veneris, and on the outer surface of the greater genital folds,

and in the appearance of a monthly discharge of blood from the vagina—the monthly purification, or *menstruation*. The blood comes from the womb, which at this period receives a greater quantity than at other times. On this account a certain indulgence is necessary during menstruation, and violent bodily exertions are to be avoided. The discharge is looked upon as the sign of puberty—that is, that a portion of the eggs in the egg-case, or ovary, have reached maturity. From time to time one of the little bladders bursts, and the matured egg, or *ovum*, passes out, and is usually received by one of the Fallopian tubes, or egg-carriers, and is conducted through it into the cavity of the womb. On its way it can be impregnated by the male seed (see § 37). The cessation of menstruation, between the fortieth and fiftieth year, shows, as a rule, that the activity of the ovaries has ceased, the capacity to conceive ceasing with it.

3. *Breasts.*

§ 36.

The *breasts* are developed at the time of puberty in the shape of two half-balls, lying upon the anterior surface of the chest, one on each side of the breast bone. The external skin of the breast is distinguished by its softness and delicacy. Upon the summit of each breast a red tender projection is found—the *nipple*. A circle of skin darker than the rest surrounds each nipple; this is called the *nipple-circle*, or *areola*. Underneath the skin of the breasts, surrounded by fat, lie the breast glands. Each gland is composed of several lobes, or divisions, lying in a distinct cavity, separated from the others by fat. The activity of the breast glands begins at the commencement of pregnancy. They prepare the milk which after the birth of the child serves for its first nourishment. From each gland spring about fifteen fine tubes—the *milk conductors*—which open through fine orifices in the nipple.

PART II.

PREGNANCY, LABOUR, AND CHILDBED IN THEIR REGULAR COURSE.

SECTION I.

PREGNANCY IN ITS REGULAR COURSE, AND THE RELATION OF THE MIDWIFE THERETO.

CHAPTER I.

PREGNANCY IN GENERAL.

§ 37.

PREGNANCY is that state in which a human female nourishes within her own body the young of her kind, or, is with child. It begins at conception, and lasts till labour.

Conception is that process by which a woman becomes pregnant, in consequence of a fruitful intercourse. In it the seed of the male passes from the vagina, through the neck of the womb, into its cavity, and thence through the Fallopian tubes, up to the ovaries (egg-cases). If it meets a mature ovum in its course, it impregnates it. Impregnation may take place at the ovary, or the ovum may have left the ovary, when it may meet the seed in the Fallopian tube. It is rare that more than one ovum is impregnated at one time. In a regular pregnancy, the impregnated ovum passes through the Fallopian tube into the uterus, where it attaches itself and grows.

The duration of pregnancy is reckoned at 280 days, or 40 weeks, or 10 lunar months of four weeks each; that is, labour is expected to set in forty weeks from

the day on which the *menses*, or monthly discharge, appeared last. Not unfrequently, however, a child having every appearance of maturity is born before the forty weeks have run. In some other cases, pregnancy lasts one or even more weeks beyond the usual time.

CHAPTER II.

THE REGULAR DEVELOPMENT OF THE OVUM WITHIN THE WOMB, AND THE HUMAN EMBRYO.

§ 38.

The *ovum*, or egg, is at first a little bladder, or bleb, scarcely perceptible to the naked eye. This contains the yolk out of which, after contact with the male seed, the fruit is developed. Having reached the womb, the ovum finds a resting-place in one of the folds of the uterine mucous membrane, which has been prepared for its reception, and which soon completely overgrows it. It grows thus embedded in the mucous membrane, whence it receives its nourishment, until in about twelve weeks it completely fills the gradually enlarging uterine cavity. The canal of the neck of the womb remains open, and secretes a tough, jelly-like mucus. The thickened and soft mucous membrane of the uterine cavity forms the outermost covering of the embryo, and is called the *decidua*. It mostly retains its attachment to the ovum during labour, and a layer of it is cast off with the after-birth, on which account it is called the decidual membrane, or *membrane that falls*, or *is cast*. Only the outer layer remains on the inner wall of the uterus.

§ 39.

Even in the first weeks of growth, within the cavity of the uterus, numerous fine, close tufts spring up on the outer surface of the original embryonic membrane. These dip down into the uterine mucous membrane

like roots. This tuftlike membrane is called the *chorion*.

On the inner surface of this is a third very delicate membrane—the amnion. This surrounds the amniotic fluid, or “waters,” in which floats the little embryo.

§ 40.

In the course of the second month of pregnancy the tufts disappear from the greater part of the chorion, whilst at one point they become closer, and send off numerous branches. Into these branches those vessels penetrate which come from the body of the embryo by the navel cord. This is also the place where the uterine mucous membrane, rich in blood, grows stronger, and sends off outgrowths among the tufty branches. As these grow together, in the third month of pregnancy, the placenta is formed, into which the navel cord from the embryo penetrates. The navel “cord” consists of three vessels surrounded by a gelatinous mass, and this again is surrounded by a sheath formed from the amnion. There are two navel arteries, which advance through the navel opening of the embryo, and convey the blood to the placenta, and a navel vein which conveys the blood through the same opening back again to the child’s heart. The two arteries of the cord divide into several large trunks on the inner side of the placenta, the branches of which penetrate it, dividing again and again until they reach the finest subdivisions of the tufts. Here they turn round to the opposite direction, and, joining together, become larger and larger until they all unite into one, the *vein* of the cord. In the placenta, the tufts containing the rapidly circulating blood of the embryo are bathed in the blood which streams from the vessels of the womb. In its circulation, then, the blood of the embryo receives from its parent the material it requires for its own growth, and which is conducted to it by the vein of the cord; and in return the two arteries of the cord carry back the

blood, which has served its purpose, to the placenta, there to be refreshed and made serviceable. By its connection with the placenta, the embryo receives from the maternal blood not only the peculiar juice such as is prepared by digestion after birth, but also the oxygen which later on enters the lungs by breathing. It is for these reasons that every disturbance or interruption of this connection, however short, is so dangerous to the life of the child, as we shall see later.

§ 41.

From the fourth month of pregnancy, then, the ovum consists of the following parts.

The outermost covering is the decidual membrane.

Next follows the chorion, or tuft membrane, which has already lost its tufts, and presents a smooth appearance over the greater part of its surface. At one part grows the placenta, a flat spongy mass of a round or oval shape. At the end of pregnancy it has a diameter of from five and a half to seven and a half inches, and is from two-thirds to three-quarters of an inch in thickness. It weighs from sixteen to twenty ounces. Its outer surface, slightly arched and covered by the decidual membrane, looks as if separated into divisions by deep furrows. If there is a separate portion by the side of the principal placenta, it is called a *by* or *secondary* placenta.

Upon the inner surface of the chorion, or tuft membrane, lies that of the "waters," called the *amnion*. This membrane covers the inner surface of the placenta, and at the spot where the vessels of the cord enter it forms a sheath over them. This is the innermost membrane of the ovum.

It contains the "waters" which surround the foetus. These are a whitish, muddy-looking liquid, the quantity of which varies greatly. Usually at the end of pregnancy it will amount on an average to from one to two pints. The use of the waters during pregnancy

consists in this,—they keep the uterus and membranes in a proper state of distension, whereby the foetus has sufficient room for free growth and movement, is protected from outside pressure, and the parts that lie touching one another are prevented from growing together. (Of the use of the waters in labour we shall speak further on.)

The foetus is connected with the placenta by the navel cord. The sheath of the cord is directly continuous with the skin of the foetus at the navel. The cord begins in the second month of pregnancy, is at first very short, and gradually increases in length. In the mature foetus it is usually from eighteen to twenty inches long, but is often much longer or shorter than this. It is sometimes more and sometimes less twisted round on itself. The thickness or thinness of the cord depends on the quantity of the jelly-like substance that surrounds its vessels. What are called false knots are little tumours caused by a heaping-up of the jelly-like substance in particular spots, along with a tortuous serpentine condition of the vessels. On rare occasions, however, the cord is twisted into a true knot. The cord is usually attached to the placenta near its centre, but not unfrequently near the edge. As an exception, the cord is attached to the chorion at some distance from the placenta, so that the principal trunks of the vessels have to run a little way in the membranes before they reach it. At the birth of the child the membranes, the placenta, and the cord attached thereto, are usually expelled after the child, and they are called on this account the *after-birth*.

§ 42.

At the end of the first month of pregnancy, the embryo is very small, the human form scarcely to be recognised, and the limbs only just indicated.

In the second month the embryo reaches a length of from 1 to $1\frac{1}{8}$ inch, and approaches its permanent

form. The head is still very large in proportion to the rest of the body; the arms and legs are beginning to be formed.

In the third month the young human being reaches a length of about $3\frac{1}{6}$ inches. The neck, separating the head from the trunk, is more distinctly seen; the fingers and toes are plainly to be recognised.

In the fourth month the foetus reaches a length of about $4\frac{1}{2}$ inches. The sex is plainly to be distinguished.

In the fifth month the foetus grows to a length of $10\frac{1}{2}$ to $11\frac{3}{4}$ inches. The skin is covered with woolly hair; the limbs begin to move jerkingly. The child born at this period at the most makes a few gasps for air, and dies.

In the sixth month the foetus is $12\frac{1}{2}$ to $13\frac{3}{4}$ inches long, and from $1\frac{1}{2}$ to 2 lb. in weight. The deposition of fat under the skin begins. After birth it retains life for an hour or two.

In the seventh month it becomes 14 to $15\frac{3}{4}$ inches in length, and weighs $2\frac{1}{2}$ to 3 lb. The skin is very red, and a whitish curdy substance has collected on it; the hair begins to grow on the head. After birth the child may live some days,—rarely to grow up, however.

In the eighth month the length is about 16 to $16\frac{1}{2}$ inches, and the weight from $3\frac{1}{2}$ to 4 lb. The skin, still red, is thickly covered with woolly hair, the body is still thin, and the bones of the skull are widely separated by membrane-covered spaces (*sutures* and *fontanelles*). The new-born child sleeps a great deal, has little warmth of its own, and for this reason is easily chilled. It has a weak, whimpering voice, and does not suck yet; still it may live.

As children born alive at the commencement of the eighth month usually die soon, the Prussian law has pronounced the foetus viable (that is, capable of living) that has been carried thirty weeks, or 210 days.

In the ninth month the foetus measures about $17\frac{1}{3}$

inches in length, and weighs on an average about $4\frac{1}{4}$ lb. The limbs become round, the woolly hairs fall out, the hair of the head becomes thicker, the eyebrows and eyelashes grow. The new-born child can usually suck, and with good attention will generally live.

In the beginning of the tenth month the child is about 18 inches in length, and about $4\frac{1}{2}$ to $5\frac{1}{2}$ lb. in weight. The skin is not so red, and has fewer wrinkles; woolly hairs few in number, mostly upon the shoulders. The nose and ear cartilages are soft; the soft finger-nails do not reach the tips of the fingers.

The mature child (at the end of the tenth month) is about 19 to 21 inches in length, and weighs about $6\frac{3}{4}$ to $7\frac{3}{4}$ lb. The skin is of a bright rose-red, and for the most part devoid of woolly hair; the hair on the head is usually dark, and very variable in quantity; the cartilages of the ears and nose feel hard; the nails are firm, and the finger-nails reach beyond the ends of the fingers; the trunk and limbs are rounded and full, the legs being the least so; the bones of the head are hard, and the spaces between them narrow. In boys, the testacles are in the *scrotum*, or purse; and in girls, the genital folds lie close together. The new-born child cries and struggles vigorously; it opens its eyes, soon passes urine, and generally in a few hours empties its bowels of a blackish-green stuff called the *meconium*.

§ 43.

Just as the midwife must have a thorough knowledge of the female pelvis, so it is not less necessary that she should be acquainted with the form and size of the child, as in labour the latter must pass through the former. The largest and hardest part of the child is the head, and a knowledge of this is of the greatest importance. It has two parts—the skull, or brain-pan, and the face. The most important is the skull, as the part of greatest circumference. It is formed of seven bones: in front lie the two bones which form the forehead—the *frontal bones*; in the middle, behind these,

are the two *parietal* or *side bones* ; and at the back of the head the *occipital*. The surface of the *frontal* or forehead bones, and of the parietal bones, is smooth ; that of the *occipital* is somewhat uneven. Each of these bones is arched outwards, and has a prominence which is most strongly developed in the parietal bones. On both sides of the skull, underneath the side bones, lie two flatter ones—the *temporal* or *temple* bones.

§ 44.

In new-born infants the bones of the skull are still united together by a membrane that permits movement between them. Where only two bones lie edge to edge, the space between them is called a *suture* ; where more than two come together, it is called a *fontanelle*. There are five sutures :—

1. The *frontal suture*, between the two frontal bones, beginning at the root of the nose and passing backwards.

2. The *sagittal* or *arrow suture*, between the two parietal bones, passing in the same direction.

3. The *coronal* or *crown suture*, between the two frontal and the two parietal bones, passing across from one temple to the other.

4. The *posterior suture*, across between the side bones and the occipital bone. It consists of a right and left limb, which meet so as to form an angle or corner.

5. The *temporal suture* of each side between the parietal and the temporal bones.

Besides these sutures, the midwife has to note the following *fontanelles* :—

1. The *great fontanelle*, between the rounded-off edge of the frontal and parietal bones, where the frontal and sagittal and the coronal suture from both sides meet together. The bones are here separated by a four-cornered space, which in front, between the two frontal bones, forms a sharper corner than in the direction of the other sutures.

2. The *lesser fontanelle*, between the parietal bones,

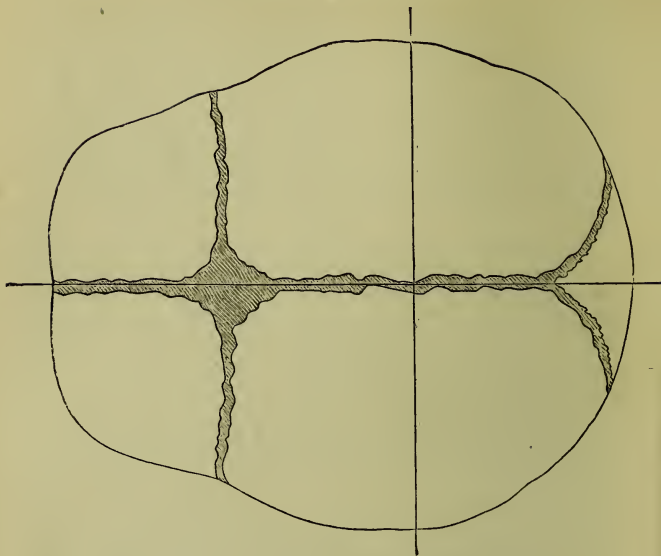


Fig. 4. Skull of a new-born child viewed from above.



Fig. 5. Skull of a new-born child viewed from the side.

and the occipital bone, where the sagittal suture and the two limbs of the posterior suture meet.

Besides these, on each side of the skull there are two fontanelles—one in front, and one behind the temporal bone.

§ 45.

As we take the dimensions of the pelvis in various directions, in order to get an idea of its size and shape, so we must do the same with the skull, to be able to compare its size and shape with those of the pelvis.

The most important diameters of the skull or head are—

1. The *back and front*, or *longitudinal diameter* from the root of the nose to the most distant point backwards; about $4\frac{5}{8}$ inches.

2. The *great* or *posterior cross* or *transverse diameter*, from the protuberance of one parietal bone to that of the other; it measures about $3\frac{1}{2}$ to $3\frac{3}{4}$ inches.

3. The *less* or *anterior transverse diameter*, from one temple to the other; it measures $3\frac{1}{8}$ inches.

4. The *great oblique* or *slanting diameter*, from the chin to the farthest point at the back of the head; it measures about $5\frac{1}{4}$ inches.

5. The *lesser oblique diameter*, from the forehead to the back of the neck; it measures about 4 to $4\frac{1}{3}$ inches.

The circumference of the head usually amounts to from $13\frac{1}{3}$ to $13\frac{3}{4}$ inches.

The shoulders measure, on an average, about $4\frac{2}{3}$ inches across, and the hips from 4 to $4\frac{1}{3}$ inches.

These measurements only apply to children at full time. The further the child is from maturity, the less will be its measurements. Moreover, even in full-term children the variations of size and weight are not unimportant. Boys on an average are larger and heavier than girls; likewise the children of multiparæ (women who have borne more than one) are larger and heavier than first-born children. In labour, the shape of the skull may undergo various alterations

from the pressure of the genital canal, and particularly of the pelvis—partly on account of the want of firmness of the bones themselves, and partly on account of their loose attachment to each other. We shall speak of these later on. In like manner, the movement which can be made by the head in virtue of its attachment to the neck by joints will be referred to in the chapter on Labour.

§ 46.

The usual position of the child in the last months of pregnancy is this: the head, as the heaviest part, lies lowest, over the internal mouth of the womb; and the buttock and feet uppermost, in the fundus.

The direction—that is, the direction of the back—is usually this: the surface of the back looks to the side, most frequently to the left, and a little forwards, more rarely to the right, and a little to the back.

Moreover, in this period of pregnancy, the lessening space within the cavity of the womb necessitates an arrangement of the limbs of the child most suitable to the size and shape of its dwelling-place. The most usual posture of the child is this: it is inclined forwards, the back bent, the chin bent on to the breast, the arms folded and crossed in front of the breast, the legs drawn up to the body with the knees bent.

The smaller the child in comparison with the quantity of waters and the size of the uterine cavity, the more changeable is its position and attitude, and the more easily do deviations from the usual ones take place.

CHAPTER III.

THE CHANGES THAT TAKE PLACE IN THE FEMALE BODY DURING PREGNANCY.

§ 47.

Pregnancy brings about certain changes in the body of the female, principally observed in the genital and

neighbouring organs, but not unfrequently in distant parts, and in the general condition of the woman.

§ 48.

The womb undergoes the most important and lasting changes. After conception, the monthly discharge generally does not return. When it does, however, in the first months of pregnancy, the flow is usually less copious and of shorter duration than at other times.

§ 49.

We have already spoken of the loosening and thickening of the mucous membrane of the uterus, into which the ovum embeds itself after its entrance, and which thus becomes the outer covering of the ovum. Naturally, the womb is more and more distended or stretched out by the growth of its contents, so that at the end of pregnancy the fundus reaches to the pit of the stomach. At the same time the flat shape of the cavity of the uterus is exchanged for a roundish-oval one, in which the edge of the top and sides is gradually widened and rounded off. The neck of the uterus also takes part in this rounding-off, although as a rule, and then not before the last months of pregnancy, it has nothing to do with the reception of the ovum. The transverse opening of the external mouth of the womb changes into a round depression. Such a great distension of the womb is rendered possible by this: in consequence of conception, not only the mucous membrane, but also the other parts of the uterus, keep pace with the ovum in growth; its vessels enlarge, and convey a richer supply of blood, particularly to the spot where the placenta grows; the muscular mass of the uterus increases in an especial manner, so that, at the end of pregnancy, its walls are almost of the same thickness as in the unimpregnated state, notwithstanding their great increase in circumference; the richness in blood even extends to the neck of the

womb. On this account the vaginal portion of the neck feels softer, swollen, and its mucous membrane loose and velvety to the touch.

§ 50.

In the first three months of pregnancy the true pelvis becomes more and more filled up by the enlarged uterus. From the fourth month there is no longer sufficient room for it, and it is therefore compelled to rise up in the abdomen. As the uterus rises above the inlet of the pelvis the top always hangs over forwards, and the vaginal portion is situated high up behind. From this time the uterus lies in contact with the abdominal wall in front, through the whole course of pregnancy, with but very few exceptions, whilst its advancing size forces the intestines more and more behind, to the sides, and upwards. For the rest it remains to a certain degree movable in the abdominal cavity; and in lying down, the fundus usually sinks down towards whichever side the woman is lying on, sometimes with a slight twist, so that the opposite side is turned a little forwards. Most frequently it lies a little to the right.

§ 51.

The vagina also becomes more *vascular*—that is, its blood-vessels become larger, and contain more blood—and by the softening and thickening of its walls it becomes wider and more distensible (more capable of being dilated). Its mucous membrane turns a bluish colour, and feels softer and warmer and more moist. By the swelling of the vaginal arch the vaginal portion is shortened.

The external parts also swell to some extent in consequence of the increased supply of blood, and the genital fissure gapes a little.

The whole pelvic region becomes fuller and rounder by a richer deposition of fat underneath the skin.

§ 52.

As the enlarging uterus rises up in the abdominal cavity, the walls of the latter are put more and more on the stretch by the increase in size, so that ruptures of the under-layers of skin almost invariably take place. These ruptures give rise to marks on the skin of the abdomen. These are slightly sunken bluish-red glazed streaks, descending on both sides of the navel. After the birth of the child they become shrivelled, and afterwards white, and are known as the so-called "scars" of pregnancy. From the same cause, during the second half of pregnancy, the wrinkles of the navel become flattened out, and the navel pit disappears.

The pressure of the pregnant uterus upon the bladder is shown by the frequent desire to pass urine, especially in the first and last months of pregnancy. Pressure upon the bowel can produce obstruction of it.

By the pressure of the pregnant uterus upon the great blood-vessels of the thighs and pelvis, the circulation in these parts is interfered with, and, sometimes in the early period of pregnancy even, this interference gives rise to swelling of the veins (*varicose veins*) of the legs, the external genital parts, and the seat.

The swelling of the legs also, to which pregnant women are subject towards the end of pregnancy, is usually the result of impeded circulation produced by the severe pressure.

In rare cases, in the later weeks of pregnancy, pain in the legs is produced by the pressure of the child's head,—already descended into the pelvis,—upon the nerves.

§ 53.

The breasts become fuller and more distended during pregnancy, the nipples become more prominent, the *areola*, or coloured circle round the nipples, grows darker in hue, and the little glands that lie in and around the circle become larger and prominent. The

blood-vessels that course over the breasts look blue through the white skin. In the later months of pregnancy a milky liquid oozes from the nipples through the mouths of the milk ducts, or may be easily pressed out.

§ 54.

Besides the dark colour of the areola, irregular brownish patches are often to be seen in pregnant women in other parts of the skin, and especially on the face and forehead. Almost always a brown streak runs down the middle of the belly, and reaches to the pubes.

§ 55.

Many women have increased appetites during pregnancy, and plainly get healthier and stronger. In others, on the other hand, their own nutrition suffers in favour of that, and of the growth, of the child. In such women particularly, other disturbances frequently show themselves.

One of the most frequent and notable disorders is nausea and actual vomiting, particularly in the morning before food has been taken, but often also during the day after meals. Usually it disappears after the first months of pregnancy, or towards the middle of it, and rarely persists throughout.

Besides these, pregnant women not unfrequently suffer from salivation (excessive flow of saliva or spittle), sourness of the stomach, and heartburn. They often have a repugnance towards some kinds of food and a longing for others, sometimes even for indigestible things.

Moreover, pregnant women often suffer from irregularities in the circulation, such as rushes of blood to the head or chest, giddiness, or palpitation of the heart; or pains make their appearance in various parts of the body, sometimes in regular attacks, headaches, toothaches, etc.

More rarely, disorders of the senses are observed, more particularly that of sight.

The disposition of the pregnant woman is often changed. Some feel better and more cheerful than when not pregnant; others suffer from dejection and lowness of spirits.

CHAPTER IV.

EXAMINATION OF PREGNANT WOMEN.

§ 56.

The changes described, which take place in the genital organs, and particularly in the uterus during pregnancy, the midwife discovers by examination.

Examination is the most important and difficult part of the art of midwifery, and requires great and steady practice. The course of procedure at the examination of a pregnant woman is the same as is followed in the examination of a woman in labour or afterwards. The special points that the midwife must bear in mind at the examination of the latter will be treated of later on.

The examination is external and internal.

§ 57.

It is not always necessary to *see the belly* and the external organs of generation. On the other hand, the breasts are looked at, principally to note the state of the nipples and of the areolæ, and to observe if fluid is oozing from the nipples.

§ 58.

Examination of the belly by the hand, *external examination* as it is called, is of the utmost importance, and ought never to be neglected. In many cases it discloses more even than the internal examination, and ought always to be made first. The patient must lie on her back, and the walls of the belly be made as loose

as possible. It is not necessary that the examining hand should actually touch the parts—they can remain covered by the chemise or a thin towel; exposure is to be carefully avoided. The midwife seeks to note, by feeling very carefully—

1. The distension of the belly; the state of the navel;

2. The size, form, and position of the womb. If the midwife cannot distinctly make out the edges of the womb by feeling, either in consequence of the walls of the abdomen being stretched too tight, or because the uterine walls are too soft, she must endeavour to inform herself by *percussion*—that is, by laying a finger of one hand on the surface of the belly, and tapping it with the tips of one or two fingers of the other. Where the hollow sound, produced by striking over the windy intestines, ceases, from above downwards, and from the sides to the middle, there are the borders of the uterus;

3. The thickness, degree of tension or tightness, hardness, or softness of the uterine walls;

4. The movement, size, and position of the foetus. The movements of the foetus can be felt from the middle of pregnancy. The movements of the feet can be most plainly felt, but in addition to these, often movements of the whole body. If the movements are lively, the eye may distinguish them, even under the layer of clothing. The different parts of the child can first be recognised with certainty in the later months of pregnancy, when the foetus has reached a certain size. Then, however, by examining carefully with both hands, especially when the uterine walls are not too much on the stretch, the midwife may often plainly distinguish buttocks, back, head, and limbs, and from these judge of the size and position of the child;

5. The quantity of “waters” contained in the uterus. The more uniformly the uterine walls are on the stretch, the greater, in proportion to the uterine enlargement, is the quantity of “waters”;

6. The size of the pelvis externally, the breadth and arching of the hips, and the incurving of the sacrum.

§ 59.

An important part in the external examination of the belly is performed *by the ear*. The patient lies on her back, with the legs extended. The midwife first covers the belly with a chemise or a fold of clean cloth, and then puts her ear to the abdomen, over the fold of cloth. From the fourth to the fifth month of pregnancy the *placental murmur* is heard. This is a blowing, whistling hum or murmur, keeping regular time. It is produced by the stream of blood in the enlarged arteries of the uterus, and its beat keeps time with the beat of the patient's pulse at the wrist. The sound may be heard at any part of the surface of the uterus; but it is most frequently met with in one or other flank. A little later in the second half of pregnancy the sound of the foetal heart may be heard, not unlike the ticking of a watch; it is a double beat, and almost twice as fast as in a healthy grown-up person. It is usually heard most plainly when the child's back lies in contact with the front wall of the abdomen.

The striking of the child's foot against the uterine wall also produces a sound, which can often be perceived at a period when the movement cannot be felt by the hand.

§ 60.

For the internal examination it is best to have the patient on her left side, with the thighs drawn up.* The midwife, standing by the bedside, or sitting on the edge of it, passes the forefinger of the right hand (previously well washed, then oiled or smeared, with

* In Germany pregnant women are usually examined whilst on the back, and in the original the directions given apply to examinations in this position.

lard) from the perinæum, between the genital folds, into the vagina. She then gradually pushes it on in the line of the axis (middle line), keeping the last three fingers bent into the palm of the hand. Where she cannot reach far enough up with the forefinger she may use the middle finger as well.

It is seldom necessary to use four fingers, or the whole hand, in examining. This should never be done except to women in labour, and then only in extreme cases, where something wrong is suspected, and the midwife cannot find out what it is by using one or two fingers only; or when it is necessary in order to ascertain accurately the size of the pelvis. To do this she brings her fingers to a point, so that they form a cone, and having greased them, and separated the folds of the vulva, she passes the hand, by a slow and twisting movement, in the direction mentioned above, gradually working the hand higher and higher.

At the internal examination the midwife must note principally—

1. The condition of the perinæum and external parts, the direction of the genital fissure—that is, whether it looks downwards or more forwards—by which the greater or less slope of the pelvis is known;

2. The state of the vagina;

3. The state of the vaginal portion of the womb—the condition, width, and dilatibility of its mouth; the possible freedom of the cervical canal—its length, breadth, and dilatibility;

4. The condition of the membranes, if the finger can reach them through the canal of the neck;

5. The state of the “presenting” part of the child, and its relation to the pelvis. Before the seventh month the child cannot generally be felt from the vagina. After this time, when the head presents, the midwife can usually feel it through the anterior vaginal arch, at first lying loose and movable above the pelvic inlet, and retreating when touched, afterwards lying more fixedly and heavily. In first pregnancies, if the

pelvis be wide, the presenting part, along with the lowest segment of the uterus, is usually found in the true pelvis towards the end of the time. In later pregnancies the head frequently does not descend till labour sets in. If the canal of the neck allows the passage of the finger, the midwife can feel the head plainly through the membranes, and sometimes even recognise a suture or fontanelle;

6. The form and size of the pelvis. In order to examine the pelvis as accurately as possible, the bowel must be emptied beforehand; the midwife often finds it so full of hard lumps during pregnancy, that she might mistake them for the bony walls of the pelvis. The examination is best made in the last two or three months of pregnancy, at which time the previous loosening of the soft parts permits the most accurate investigation of the pelvic walls. If the head should be already in the pelvis, it may be concluded, as a rule, that the pelvis is wide enough—at least, for the presenting child. If the pelvis is still empty, she slowly carries the first, or first and second fingers on towards the back wall of the pelvis, whilst, with the other fingers turned down into the palm of the hand, she carefully presses back the perinæum, and then allows the tips of the fingers to glide over the anterior surface of the sacrum, until they reach the sharp border of the promontory. If she is not able to reach the promontory after a careful examination, she may conclude with some certainty that the antero-posterior (direct) diameter is not narrowed. Generally the promontory is easier to reach in later pregnancies than in first, as the perinæum and external parts offer less resistance to the hand, even allowing the turned-down fingers to partially penetrate into the passage. In order to judge of the width of the pelvis, the midwife must be careful to follow the curve of the side walls of the pelvis from the posterior surface of the symphysis pubis. The more these curve outwards, and the less she is able to follow them backwards, the

more justified is she in taking for granted that there is a sufficiency of room in that direction.

§ 61.

It is of great service to *combine the internal and external examinations*; that is, whilst the finger of one hand is exploring in the vagina, to press gently upon the belly of the patient with the other hand. In this way the midwife can, for example, ascertain accurately the size and position of the womb in the earlier months of pregnancy or at a later period; or during labour she can clear up a doubt as to the presentation by pressing the child downwards with the one hand upon the exploring finger of the other. For these examinations the walls of the abdomen must be relaxed as much as possible; they can therefore only be carried out with the thighs well drawn up.

§ 62.

The midwife must be able to examine with one hand as well as with the other. In order that her hands may be skilled, she must not make them hard and stiff by heavy work. She must avoid wounding them as much as possible, and keep the nails cut round, but not too short. The examining hand should never be cold; but, above all things, the midwife must keep her hands clean and sweet by washing them thoroughly, and brushing the nails carefully. She must wash her hands before every examination, even although she may not know them to be unclean; and, of course, she will wash them when the examination is ended.

CHAPTER V.

THE SIGNS AND TIME-RECKONING OF PREGNANCY.

§ 63.

Those only, that actually prove the existence of a child within the womb, can be considered *certain signs* of pregnancy. They are:—

1. *Feeling some part of a child within the womb, either by external or internal examination ;*
2. *Feeling distinct movements of the child, or hearing the blow of the child's foot against the walls of the womb when the ear is applied to the abdomen (see § 59) ;*
3. Hearing distinctly the sounds of the foetal heart.

§ 64.

All the other changes that take place in the body of the woman during pregnancy are uncertain, and at best probable, signs. Similar changes may be brought about to some extent by sickness, and to some extent they may be absent even during pregnancy. The probable signs of most value are the changes that take place in the genital organs, these being the most constant in every case.

When the menses, or monthly courses, stop in a healthy woman, we conclude with probability that she is pregnant; but the midwife must not forget that this cessation may depend on sickness, and that, on the other hand, in some women the menses return one or more times during pregnancy.

Increase in the size of the uterus justifies the assumption of pregnancy: the more regularly it progresses the more the shape of the uterus is retained withal; and when, with increase in size, there is not only a shortening or rounding of the vaginal portion (which may take place when the enlargement is caused by disease), but when at the same time there is a softening and loosening of its texture. This softness and loosening of the vaginal portion, which, except in pregnancy, never occurs but at a menstrual period, leads the skilful midwife to suspect pregnancy even in the second and third month in first pregnancies; whilst in women who have already borne children the changes of the vaginal portion set in later.

The uterine murmur has also a certain value as a sign of pregnancy, as it is but rarely heard in enlargements from disease.

The same with the changes in the breasts—the swelling, the dark colour of the areola, the oozing of a milky fluid from the nipple in women who have not previously borne children, are tolerably safe signs of pregnancy; but they are not so with women who have done so. In them the areola retains its colour, and an oozing of milk from the nipple is not uncommon in unhealthy conditions of the womb and its surroundings.

All disorders of the general health of the patient—nausea, vomiting, salivation, longings, etc.—are but uncertain signs of pregnancy. They usually set in during the second month, rarely earlier, and disappear towards the fourth or fifth; frequently, however, they are altogether absent. Some women who have experienced these disorders in previous pregnancies can tell almost to a certainty by their setting in that they are pregnant. The midwife, however, must be very cautious as to their meaning, and never trust to them alone. In all doubtful cases she must keep back her opinion and insist on a medical man being consulted.

§ 65.

The midwife may seek to find out the duration of an existing pregnancy in various ways. Very commonly it is reckoned from the stoppage of the menses. Ten lunar months, forty weeks, 280 days, or nine calendar months and six days, are reckoned, from the day the last monthly discharge sets in, to labour. In most cases these calculations prove correct, when we are certain what to reckon from, sometimes even to the very day.

§ 66.

If we cannot make these calculations, either from the pregnant woman not knowing when her menses appeared last, or from it appearing likely that they returned once or more after conceiving, or from conception taking place whilst she has been suckling another child, and before the menses returned after

its birth, the midwife may then reckon from the day on which the movements of the child are first felt (*quickening*). This is supposed to occur about the middle of pregnancy, as a rule. Observant women, however, usually feel it earlier, from the seventeenth to the eighteenth week, whilst unobservant ones will not notice it till after the twentieth. For these reasons this method of reckoning is very uncertain.

§ 67.

Finally, the midwife can ascertain the period of pregnancy by the combined external and internal examinations.

For this purpose she notices principally the size of the uterus, the development of the child, and, specially in the later period of pregnancy, the changes perceptible in the neck of the womb.

As long as the uterus remains within the pelvis, that is, to the beginning of the fourth month,* the midwife recognises its increase in size partly by internal examination, by its lessened freedom of movement, partly by the combined external and internal examination, when the uterus is caught between the two hands and the distance between them calculated. From the fourth month, when the top of the womb can be felt above the symphysis pubis, the size is calculated by its situation in the abdomen.

In the fifth month it gradually mounts upwards towards the navel, and in the sixth it reaches it, the body increasing in size at the same time. On account of this mounting higher, the navel looks more upward, and the pit begins to disappear. In the seventh month the uterus may be felt a little above the navel, and in the eighth it reaches two or three finger-breadths above it, the navel pit completely disappearing. In the ninth month the uterus reaches to half-way between the navel and the pit of the stomach,

* It must be borne in mind that, in this work, a month always means a period of four weeks.—TR.

and even higher ; the body reaches its greatest girth, and the navel looks like a flat bladder.

In the tenth month the top of the womb sinks down again, and a little over forwards, the tension of the abdominal walls is somewhat relieved, and the pregnant woman feels lighter. The midwife can usually discover a little hardness of the womb from time to time by feeling it, although the patient herself does not feel any pain.

It must be borne in mind, however, that these statements are not always, and unconditionally, correct, as, at the same period of pregnancy, the distension of the uterus by its contents (child, membranes, and waters) is not always alike in all women ; and even with the same degree of distension, the uterus rises higher the more it is supported by tight strong abdominal walls, as in first pregnancies, and sinks lower the more it falls forward when the abdominal walls are yielding, as in those who have borne several children.

From the time that the midwife can feel the movements of the child and hear the beating of its heart distinctly, she may conclude that her charge has reached the sixth month at least.* In the later months of pregnancy, it is hazardous to give an opinion as to its period from the size of the child as felt from the outside, as this is not alike in all women, and the length and weight of full-grown children, as is well known, vary very much. Neither does the condition of the presenting head of the child allow us to reckon the date with any certainty. In first pregnancies in women who have capacious pelves, the head can be felt from the vagina from the seventh to the eighth month, and in the ninth it sinks down into the pelvic inlet. In women who have borne several, however, it usually remains above the pelvis until labour sets in ; and the same when the pelvis is contracted. When

* I have heard the sound much earlier, at twenty weeks and three days.—TR.

the position or *presentation* is irregular, the presenting part generally sinks down into the pelvis late, often only during labour.

In the condition of the neck of the womb also, there is a considerable difference between first and subsequent pregnancies. In first pregnancies, even as early as the third month, the swelling, softening, and rounding of the vaginal portion, and the transformation of the transverse split of the external mouth of the womb into a little round pit, render the suspicion of commencing pregnancy a very correct one usually. From the seventh month the swelling of the vaginal dome, in the neighbourhood of the neck of the womb, frequently shortens the vaginal portion. If the head descends into the pelvis in the ninth or tenth month of pregnancy, the anterior lip of the womb gradually disappears from pressure—without the mouth opening, however. By this the cervical canal is only apparently opened out. It runs to the lowest segment of the uterus without being shortened, but is pressed flat together from above in a backward direction. Still, there are cases in which, in the last months of pregnancy, the cervical canal is really partially, or even completely, unfolded by the pressure of the head. When the head remains high up, the vaginal portion is not quite obliterated even at the end of pregnancy.

In women who have borne children, the changes in the vaginal portion usually set in later, and more irregularly. It is apparently not so much shortened in them; and even at the end of pregnancy, the swollen lips of the womb, often notched at the sides, distinctly project into the vagina. The cervical canal remains unopened.

About the end of the eighth, or beginning of the ninth month, the external mouth of the womb begins to dilate; the opening, which is funnel-shaped, becomes larger; and in the last month of pregnancy (sometimes earlier) the whole of the cervical canal admits the finger: the internal mouth of the womb, however, is always narrower than the external.

CHAPTER VI.

THE MIDWIFE'S DUTIES IN REGULAR PREGNANCY.

§ 68.

Pregnancy is not to be looked on as a sickness, although the changes it produces are sometimes so excessive that they may assume the nature of diseases. Moreover, many things are hurtful to a pregnant woman that are not so to a woman who is not pregnant.

It is the duty of the midwife, therefore, to advise the woman who has entrusted herself to her care as to what is proper for her condition, and keep her back from everything that can be hurtful.

§ 69.

As a rule, a pregnant woman should follow her ordinary mode of life, so long as there is nothing in it injurious to health; but she must avoid all excess. Indigestible and windy foods must be strictly withheld. Heating drinks—such as beer, wine, strong coffee, and tea—must be taken with caution, and spirits not at all. Vomiting in the first months, when, as is often the case, it only occurs on getting out of bed in the morning, when the stomach is empty, is often overcome by the patient taking a light breakfast in bed. In the later months she must be careful not to eat too much at once, especially at night.

It is very important that the bowels should be gently opened every day. The pregnant woman must try to accustom herself to regularity with regard to this. To this end the midwife may order a glass of cold water morning and evening, the use of cooked fruit, laxative kinds of food, etc. If these means are not sufficient, an enema of lukewarm water may be used.

She must not order purgative medicines: this ought to be left to the medical man.

The pregnant woman must pass urine as often as she has the desire. This rule should be followed with particular care in the first three months of pregnancy.

The clothing of the pregnant woman should be so arranged that the free expansion of the belly and breasts may not be hindered, nor the free circulation of the blood in the lower extremities prevented, by burdensome pressure or too tightly fitting garments. In the later period of pregnancy, the thighs, genital parts, and belly should be protected against cold by sufficiently wide drawers. To those who have borne children, and who have again passed the sixth month of pregnancy, a properly adjusted binder is much to be recommended; this is absolutely necessary when the belly hangs down.

Cleanliness generally conduces to healthiness, and especially in pregnant women. The breasts, thighs, and belly should be washed often,—the genitals at least once a day,—in cold fresh water. The medical man decides as to the use of baths. Foot-baths should be discountenanced.

The breathing of pure, healthy air is even more necessary during pregnancy than at any other time. To pass the time in a closed-up room, with used-up air,—as, for instance, where numbers of people are collected together,—is decidedly injurious to pregnant women.

As far as is possible, the patient should take moderate exercise in the open air. Generally she should not sit too long and perseveringly, and should only avoid those exertions and movements which cause a sharp shaking of the body, such as running, jumping, riding over jolty roads, etc.; or those in which the belly undergoes strong pressure, as in stooping low, pushing a drawer to with the knees, lifting heavy things, etc.

Sexual intercourse should only be very moderate during pregnancy, and exercised with caution. It is most injurious in the early period, and at the time when the menses would have appeared had there been

no pregnancy. Women who have aborted must avoid it altogether.

A pregnant woman should keep herself from strong mental excitements—such as fear, anger, and passion—as much as possible. Many women are inclined to be melancholy towards the end of the time, and believe they will never get over it. In such cases the midwife should strive to soothe and encourage them, and endeavour to instil courage, hopefulness, and confidence into them.

If the pregnant woman intends to suckle her child herself, she should keep the nipples very clean, by washing them frequently with soap and cold water; and in the later months she should moisten them night and morning with brandy, or a decoction of oak bark, in order to avoid sore nipples in childbed. If the nipples are not sufficiently prominent, the midwife should recommend her charge to draw them carefully out with the fingers several times a day during the last few weeks.

SECTION II.

REGULAR LABOUR, AND THE DUTIES OF THE MIDWIFE IN CONNECTION THEREWITH.

CHAPTER I.

LABOUR IN GENERAL.

§ 70.

LABOUR is that process in a pregnant woman by which her fruit, with its coverings, is cast out from the womb by the powers provided by nature for the purpose. The expelling powers are the *contractions of the womb*, these being aided towards the end of labour by *pressure from the abdominal muscles*. By these the resistance which the narrowness of the genital passages offers to the passage of the ovum is overcome: first, the resistance of the neck of the womb; then that of

the vagina, and above all the pelvis; and, lastly, that of the external parts, the vulva and perinæum. It is only as a rare exception, and when labour comes on very early, that the ovum is expelled entire—that is, that the child, with its membranes and their waters, is expelled with the membranes unbroken; as a rule, after the rupture of the membranes, the child is expelled, and then the after-birth.

When labour is completed by the sole powers of the labouring woman, it is called a natural labour; if artificial help is needed, it is called artificial labour, or a delivery.

Labours can be considered from various points of view, and classified accordingly; but it is sufficient for the midwife to consider the following divisions.

§ 71.

With regard to the various periods of pregnancy at which labour may set in, births may be divided into untimely, premature, timely, and delayed.

1. An untimely birth, or abortion, or miscarriage, is the casting-off of the child within the first seven months. Such a child cannot live separated from its mother.

2. Premature birth is the expulsion of the child from the beginning of the eighth to the middle of the tenth month. Such a child may be brought up under favourable circumstances, and with careful nursing.

3. Timely birth sets in at the end of the tenth month, when the child has reached maturity.

4. Delayed birth is that which sets in after the tenth month or fortieth week. A delay of a few days is not rare; where a longer delay is assumed, it is more likely that there is an error in the calculations.

§ 72.

From the character of its course, labour is divided into *regular* and *irregular*. Regular labours are those which follow the course most commonly presented to

our observation. Irregular labours are those which deviate from the regular—that is, the ordinary—course in some particular. This division is the most important for the midwife. In irregular labour the circumstances must be very favourable, if it can be completed by the natural powers, and without injury to either mother or child. For this reason, then, wherever in such a case the handbook does not give her express permission to take sole charge, she is under strict obligations to call in the assistance of a medical man.

CHAPTER II.

THE EXPULSIVE POWERS OF LABOUR.

§ 73.

The principal powers employed in labour are the contractions of the womb, or Pains, as they are called. They are independent of the will: they come on with intervals between them, which as a rule become shorter as the contractions become longer and stronger. Each separate pain begins gently, grows gradually stronger, and, after remaining so a short time, disappears as it came on. The contraction is strongest at the base or fundus of the womb, where it commences, and passes downwards to the neck, until both upper and lower parts of the womb are in a state of contraction at the same time. By these contractions the cavity of the womb is narrowed; consequently the ovum is pressed upon, and forced down towards the lower opening, where the pressure is least. At the same time the walls of the uterus become separated from the ovum by these contractions. Usually a portion of the waters gets pressed down in front of the child's head. This bladder-like bag of water, enclosed by its membranes, is pushed down like a wedge through the cervical canal to the external mouth of the womb, which is thereby

gradually dilated. Then, when, in consequence of the increased pressure, the membranes are ruptured, the waters lying in front of the child's head escape. The uterine contractions then drive the head through the rent in the membrane into the dilated mouth of the womb; this being drawn back over the head, the pains continue to force it lower into the vagina, and at last through the vulva, where, upon a renewed contraction of the womb, the body of the child, and the remainder of the waters, follow; and, after a little while, at last the placenta and membranes.

§ 74.

The contractions of the womb are called Pains because they are accompanied by pain. The pain usually begins in the loins and sacrum, and then comes round to the front, to the lower part of the belly, over the pubes, and occasionally down the thighs. The pain is caused in part by the uterine contractions themselves, through pressure on the nerves that run in the walls of the uterus; but chiefly by the distension and stretching of the mouth of the womb, the vagina, and external parts, by pressure of the membranes or body of the child.

§ 75.

The midwife recognises the coming-on of a pain by the hardening of the womb, which can be felt by the hand lying upon it, and generally before the patient herself feels any pain. At the same time she feels the uterus rise upwards, and the anterior abdominal walls driven forward by the fundus of the womb. When pregnant women suffer from pains which come and go, but which, although resembling labour pains, are from a different cause, such as colic, the midwife can distinguish them from labour pains, from the time the womb can be felt externally, by the womb remaining soft and uncontracted whilst the pain is on. But she must not forget that both kinds of pain may exist together, or alternate with each other.

§ 76.

The midwife knows that the pains are regular, above all, by the good effect they have on the progress of the labour. In the meantime, however, the effects of the pains can be prevented by unfavourable circumstances—such as, for example, a narrow passage, or an irregular presentation. The midwife must therefore keep the following in mind:—

1. In a regular pain, the hardening of the womb felt from the outside rises to a certain pitch gradually only, keeps at this pitch a while, and then goes off as gradually as it came on.

2. The contractions of the fundus and body of the womb are more powerful than the resistance of the neck. The latter, therefore, gives way before the pressure of the bulged-out membranes, and is drawn back in proportion as it dilates.

3. The pain is usually confined to the regions of the sacrum and pubes: it is not immoderately great, and corresponds to the strength of the contractions and to the hardening of the womb as felt by the hand. The intervals between the pains are free from pain, and the womb is not tender to the touch.

4. The force and length as well as the frequency of the pains are proportionate to the resistance the passages offer to the advancing child.

In judging of the pains, the midwife must not decide from her observation of a single one, as in almost every labour strong pains alternate with weak ones, but she must take a series, and observe their character and effects.

§ 77.

When the patient, after drawing in a deep breath, holds it in and squeezes and forces downwards by means of the abdominal muscles, she is said to *bear down*. By doing this the abdominal cavity is narrowed from above, from the front, and from the sides, and its contents are pressed upon; and as, when at stool,

the contents of the intestines are driven on their way by this pressure, so in labour the same pressure drives the child onwards towards the external genital opening, and the pains are assisted. In order to make the most use of these "bearings-down," the labouring woman fixes her feet against something, with the knees drawn up. She grasps a towel, or a handle, with both hands; and, the pelvis being fixed, bends the upper parts of the body forcibly forwards. Unlike the contractions of the womb, which are independent of the will, these bearings-down can be brought into play at any time. As soon as the greater part of the ovum has passed through the external mouth of the womb, however, and put the vagina on the stretch, they become involuntary; and the nearer the labour gets to the end, the less is the patient capable of controlling them.

CHAPTER III.

THE COURSE AND STAGES OF LABOUR.

§ 78.

According to the object and effect of the pains, we divide the course of labour into two principal periods, or stages,—the stage of dilatation, and the stage of expulsion. The stage of dilatation begins with the commencement of true pains, plainly felt by the woman herself, the distinct effect of which is the opening-out of the neck of the uterus and dilatation of its external mouth, and continues till these processes are completed. In the stage of expulsion, the pains drive the child, and then the after-birth, through the dilated mouth of the womb, into the vagina, and finally through the external opening, or vulva. This stage may be also divided into two—first, that of the expulsion of the child; and, second, that of the expulsion of the after-birth. The latter is therefore called the "after-birth period" or "stage."

§ 79.

Already, in the last three or four weeks of pregnancy, the midwife may become aware of an occasional hardening of the womb by the touch, although the pregnant woman herself may not feel any pain, or at most experience a slight dragging over the loins and sacrum. These painless *fore- or foretelling-pains* plainly prepare the way for labour. The fundus of the womb at the same time sinks lower down. In first labours the vaginal portion usually disappears more and more under the pressure of the head which has already entered the pelvis. The canal of the neck is more or less completely opened out (often only apparently so, however), while the external mouth of the womb remains closed. In those who have borne children, the canal of the neck, already open, generally becomes wider, but only in exceptional cases shorter. (*See* § 67.) In both, there is an increasing loosening-up and softening, not only of the neck of the uterus, but also of the vagina and external parts, accompanied by heightened temperature and increased secretion of mucus. If an internal examination be made during such a contraction, there is no noticeable action as a rule; the mouth and neck remain relaxed. If the finger can be passed through the os and cervix as far as the membranes, they will be found to lie close to the head, and but rarely, and then only for a moment, bulged out by a small quantity of waters. Occasionally the neck contracts round the finger, but only from being irritated by the touch, as this contraction can be felt when no general contraction of the womb can be detected from the outside, and consequently when no true pain is present.

§ 80.

The midwife recognises the commencement of labour, the beginning of the stage of dilatation, in part by the smart pain felt by the patient, and in part by the effect of the pain on the neck and mouth of the womb. Usually the lowest part of the ovum is already sepa-

rated to a greater or less extent from the uterus by that dilatation of the internal mouth of the womb which is produced by the preliminary or fore-pains.* During a pain this portion of the membranes is now bulged out in front of the head like a distended bladder by the pressure of the water, and is forced into the canal of the neck of the womb like a wedge. This is called the *fruit-bladder* or *presenting membranes*. When the pain ceases, the distension of the fruit-bladder also ceases, and a part of the waters re-enters the relaxed uterus. Just in proportion as the bag of waters dilates the cervical canal, so the head descends into it during the pains, and at the same time the internal mouth is withdrawn over it. The cervical canal is thus not only widened, but it is distended lengthwise at the same time. Gradually the advancing head blocks up the way, so that the waters lying in front of it cannot return between the pains, and the membranes remain distended, and ready to burst. With the farther advance of the head the distension of the membranous bag goes on increasing during the pains without any increase in the quantity of the waters. As the external mouth of the womb gives way to the pressure and widens, it is also withdrawn over the advancing fruit-bladder; and when at last the membranes are ruptured by the increasing pressure upon the water, the head has already entered into it more or less.

The lower the head sinks into the pelvis, at the commencement of labour, the more completely is the canal of the cervix closed up; consequently less water can be passed down with it, and so much the smaller is the bladder of waters in front of the head.

On the other hand, the longer the head keeps its ground above the pelvis, without entering the cervical

* It is well to bear in mind that by the term ovum, or egg, is meant, not only the child, but all the products of conception that lie within the womb, comprising child, cord, membranes, placenta, and waters.—Tr.

canal, so much the greater is the quantity of water pressed down along with it at every pain; and the dilatation of the neck of the womb, and the opening of its mouth, will be wholly or in greater part brought about by the advancing fruit-bladder.

It is most favourable when the bursting of the membranes and the dilatation of the mouth of the womb take place at the same time. But this is not by any means always the case. When the membranes are very weak, or if they are only slightly capable of "giving," and are not at the same time firm, they frequently rupture earlier, sometimes even at the very first pains; and then, instead of the fruit-bladder, the advancing head of the child has to complete the opening-out of the neck of the womb and the dilatation of its mouth; in such a case these processes are generally more painful and tedious.

On the other hand, when the membranes *give* a good deal, but at the same time are very tough, even after the mouth of the womb is fully dilated, the bag of waters advances steadily lower into the vagina, and even through the vulva, before it is ruptured, unless it is done artificially, as indeed it usually is.

When the membranes are ruptured, the waters lying in front of the head all flow out. The remainder are retained within the cavity of the womb, as long as the head of the child closes its mouth sufficiently. If the head is still high up and lying loose, however, part of the waters runs off at the time the membranes are ruptured, and part afterwards during the succeeding pains.

§ 81.

The pains at this stage—the dilating or preparatory pains—are usually weak at the commencement, with long intervals between them, and are only felt by the patient as a dull dragging in the back, with a slight bearing-down. When the mouth of the womb is dilated, they increase in strength and frequency; they come on every ten or five minutes, or even oftener,

and last about a quarter of a minute. They are accompanied by violent pain, especially in the sacrum, and towards the belly, and often downwards towards the knees, and by strong bearing-down, so that the patient is compelled to stand still, and bend the knees, and lean against something or support herself with her hands.

Even at the setting-in of the first pains, the patient experiences a certain anxiety and restlessness; added to these is a frequent desire to pass urine: the appetite is diminished.

An internal examination discloses a softer, warmer, and moister vagina; and out of the mouth of the womb a jelly-like slime is emptying itself, often in great clots. In the further course of the stage of dilatation, this is usually mixed with some blood: there *is a show*. This slight bleeding arises in part from the rupture of some minute vessels where the ovum has become separated from the womb, and in part from small lacerations caused by the distension of the neck and mouth of the womb.

§ 82.

After the rupture of the membranes the pains often cease for a while. In proportion to the quantity of waters that have escaped, the uterus fits more closely to the body of the child, so that its form becomes more irregular. As the walls of the uterus become thicker as its circumference diminishes, the parts of the child cannot be felt so plainly, and its movements are not so free. Soon the pains become stronger again; they follow one another more rapidly, and are longer; the womb becomes distinctly harder whilst they are on; the pain is more violent, and extends over the whole belly, and down to the knees; the labouring woman seeks to fix her feet against something, and to hold fast with her hands, and bears down with breath held in as she would at stool, whilst the face becomes red, and the skin is covered with perspiration.

When the flow of waters from the womb has continued to this period, it generally ceases when these stronger pains of the stage of expulsion set in. Whilst the pains drive the child's head, like a firm wedge, into the dilated mouth of the womb, they draw the latter back over it, and *the head passes out of the womb into the vagina*. This advance naturally takes place the more quickly, the pains being the same, the more nearly the head has approached the external mouth of the womb, behind the fruit-bladder. If the head is still high, the portion of the neck of the womb that is before it falls together again on the escape of the waters, and has to be opened afresh by the farther advance of the child's head.

§ 83.

The vagina itself usually offers no resistance to the advance of the child's head, as its soft and yielding walls are easily expanded as far as the walls of the pelvis will allow. Wherefore, if the pelvis be wide enough, the head is not subjected to any particular pressure in its passage through. If the pelvis opposes a little more resistance, however, the edges of the bones of the skull are made to overlap one another where they join, the scalp is thrown into folds, and a swelling forms upon that segment of the head that lies free in the pelvis—*the so-called tumour of the scalp*. It is a result of the stoppage of the circulation caused by the pressure of the pelvis upon the blood-vessels of the soft skull-walls. The tumour of the scalp is larger according to the degree and duration of the pressure. Sometimes it is produced by the resistance of the mouth of the womb, when the waters have escaped too early.

A similar swelling is produced in the maternal genital parts by pressure of the head within the lower portion of the vagina, and in the genital folds; but only exceptionally, when there is unusual strength or long duration of the pains. Retention of urine, however,

is often caused by pressure on the urinary passage, whilst towards the end of labour pressure on the lower bowel causes evacuation of its contents with violent straining.

§ 84.

When the head has advanced as far as the outlet of the pelvis, the narrowness of the vulva and the resistance of the perinæum oppose a hindrance to its progress, especially in first labours. At first the head is only visible between the greater genital folds during a pain. When this is over, it retires, and the vulva closes again: the head is *at the birth*. By the repeated pressure of the head the genital folds are more and more forced apart, and the vulva dilated from below, so that an ever-increasing segment of the head can enter it, which now does not entirely disappear during the pains: the head is *in the birth*. At the same time the head presses against the perinæum, and this, being forced downwards and backwards, is gradually thinned and stretched out to double its usual length, and also bulged forwards. This, along with the lower portion of the vulva and the vestibule, forms a gutter-like elongation of the pelvic canal, receiving the advancing head after it emerges from the bony pelvis. Besides the perinæum, the anus is also forced backwards, and put on the stretch from side to side; the front fold of the anal ring disappears, and even the anterior wall of the bowel is bulged forwards. If the expulsion of the head is delayed, a tumour of the scalp is formed anew, or perhaps for the first time, on the part that is free from pressure.

At last, during a pain, or more frequently on the cessation of one, the distended perinæum is withdrawn over the advancing head: the head is *born*. At this period, in first labours, there is usually a rupture of the anterior fold of the perinæum, sometimes extending into it.

The pains of this latter part of the stage of expulsion

are the strongest, most painful, and agonizing of the whole labour. The patient falls into a condition of the greatest anguish and excitement; she strains violently, scarcely allowing herself time to draw breath, her knees shake together, her arms clutch frantically after something to lay hold of, until at last, with a shriek, she brings the head of the child into the world.

The trunk of the child does not usually follow immediately, but is expelled after a short interval by a weaker pain. After this, the remainder of the waters escapes, often mixed with blood, as, the womb being considerably diminished in size, a portion of the placenta is usually detached.

§ 85.

In the after-birth period, after the expulsion of the child, the mother usually enjoys an agreeable period of rest, during which, with the exception of a feeling of burning in the distended and bruised external genital parts, she feels no pain, and may even give way to a light slumber when the labour has been a very long one. The womb can be felt through the soft abdominal walls as a tolerably firm, movable tumour, about the size of a man's head, of an irregular globular shape; its upper margin is usually felt on a level with the navel, or a little above, more rarely below. From time to time some blood is discharged from the vagina, during gentle contractions of the womb, which are perceptible from the outside.

The placenta is usually completely separated from the womb, in from a quarter to half an hour, by renewed and more powerful uterine contractions, and accompanied by rushes of blood. For whilst the uterus is growing smaller and smaller by means of the contractions, it is becoming displaced over the placenta, so that all the vessels that empty blood into the placenta, or carry blood from it, and by means of which the connection between the two was maintained, are torn across. The succeeding contractions force

the now separated placenta, usually with the edge in front, through the still dilated neck of the womb into the vagina. After the uterus is completely emptied, it can be felt about a hand-breadth above the pubes. During the expulsion of the placenta from the womb, the membranes have been turned inside-out, owing to their still remaining partially attached to the interior of it; and they are then drawn out by the placenta, the inner surface of which lies downwards. The after-birth is rarely expelled through the genital fissure, but generally has to be drawn out of the vagina. It is followed by a quantity of blood, partly clotted and partly fluid, that has collected behind it. It is not usual for much bleeding to take place after this, as the contraction of the womb, and its great diminution in size, have pressed together the walls of the blood-vessels, and their openings at the place where the placenta has been separated become more and more closed. This ends the labour.

§ 86.

The processes of labour are almost of more importance to the child than to the mother, for which reason the midwife must be made acquainted with the effects of labour on the child. As we have already seen, the child is connected with the placenta, in which the blood of the child is laved by that of its mother, and by means of the blood-vessels of the cord receives not only its proper nutrient juices, as they are afterwards prepared by digestion, but also oxygen, which is absolutely necessary to life, and which after birth is introduced into the lungs with the air we breathe, and thence taken up into the blood. (*See* § 40.) So long as the communication between the child and its mother by means of the navel cord and placenta is uninterrupted, it has no need for breathing, and for this reason it makes no respiratory movements. By the pains of labour, however, this communication suffers passing interruptions. When, for instance, the

uterus is contracted, the blood-vessels running within its walls are compressed, and not only is a greater part of the blood in them driven away in the returning vessels, but, what is of more importance, the inrushing new, bright red blood in the arteries is prevented from coming. Consequently the freshening of the child's blood in the placenta is not indeed altogether stopped during a pain, but it is not so complete as usual. Moreover, by the uterine contractions the uterine cavity is diminished in size, and there is necessarily a pressure upon the ovum within it, and this is communicated to the body of the child through the waters. The midwife discovers the disturbing influence of the pains partly by the fact that at the beginning of a contraction the placental murmur becomes clearer, but afterwards fainter, and then disappears, and only returns when the pain has ceased ; and partly by the fact that the beat of the child's heart becomes slower and weaker during a pain than in the intervals. These effects, however, are first noticeable when the pains have grown strong, and when there is a considerable reduction in the size of the womb after the discharge of the waters, and in the stage of expulsion ; and they increase in proportion as the uterus succeeds in emptying itself of its contents. The more waters, therefore, there are left within the womb after the rupture of the membranes, the more favourable is it for the child. At the close of the stage of expulsion, however, when the head and even a portion of the trunk of the child have left the womb, when the violent pains follow more and more quickly, and when, as is commonly the case, a portion of the placenta has become detached, then in every case the necessity for breathing must rapidly grow more urgent. Therefore the first movement of a child, on emerging from the genital passages, is a strong inspiration or drawing-in of its breath, followed by a cry ; often, indeed, when only the head is born, the movements of respiration can be observed on the child's face. After the birth of

the child, the navel cord generally pulsates, as before, as far as the interior of the vagina; but no actual circulation of the blood takes place within the compressed placenta. During the first minutes, however, a portion of the blood in it may be driven by the contracted uterus into the veins of the cord, and in this way enter the body of the child. The more completely the lungs of the child are filled with air, the weaker becomes the pulse in the cord, and perceptible at a constantly diminishing distance, till at last it disappears altogether, for the reason that the child's blood now takes another course within the body, and that it now streams in greater quantity to the hitherto inactive lungs.

§ 87.

The duration of labour varies very much, according to the strength of the pains, the width of the pelvis, the dilatability of the soft parts, and the size of the child. In first labours, as a rule, the duration is longer than in those who have borne children. The average duration of labour where the pelvis is wide is from twelve to fifteen hours, of which eleven to fourteen belong to the stage of dilatation, and one to two to that of expulsion.

In some cases, the stage of dilatation, as well as that of expulsion, may be considerably longer or shorter without the labour being classed as irregular on that account.

CHAPTER IV.

THE NATURAL POSITION OF THE CHILD, AND ITS PASSAGE THROUGH THE PELVIS.

§ 88.

One of the things necessary to a natural course of labour is a favourable position of the child.

That is to say, a mature child can only pass along

the genital canal lengthwise,—*the head or the breech must go first*. The usual position of the child within the uterine cavity, in the last months of pregnancy, as we have seen, is this: the head is directed downwards, and the top of the skull lies over the internal mouth of the womb, the chin being bent on to the breast. In a hundred labours the *vertex* or top of the head “presents” ninety-seven times, on an average. Wherefore *the vertex presentation is the regular one*.

§ 89.

The head presentation is not only the most frequent, but when everything else is natural it is to be considered the most favourable one also. The head has indeed the greatest circumference (is the farthest round) of any part of the child's body, and its passage through the pelvis causes the most difficulty. These difficulties are diminished, however, as we shall see presently, by the fact that the skull adapts itself to the form of the surrounding structures more readily than the other parts of the body. When the head is born, then the birth of the remaining portion of the body follows without any trouble. A second advantage lies in this—that by its size and shape the skull fills out the lower segment of the womb most completely. By means of this the pressure of the waters upon the point of the ovum within the mouth of the womb, during the pains, is moderated, a more favourable shaping of the membranes is procured, and also a longer preservation of them from rupture, and, after the rupture, the complete escape of the waters from the uterine cavity is prevented, whereby the dangers of a prolonged labour are considerably diminished. (*See § 86.*)

§ 90.

But, for labour to proceed regularly, it is not only necessary that the head should be the presenting part, but experience teaches us that the head should enter

the pelvis and pass through it in a particular way. The roominess of the pelvis, as compared with the size of the child's head, as we have seen, is not only meagre, but its form varies in the different parts of it, so that in one part the greatest resistance to the

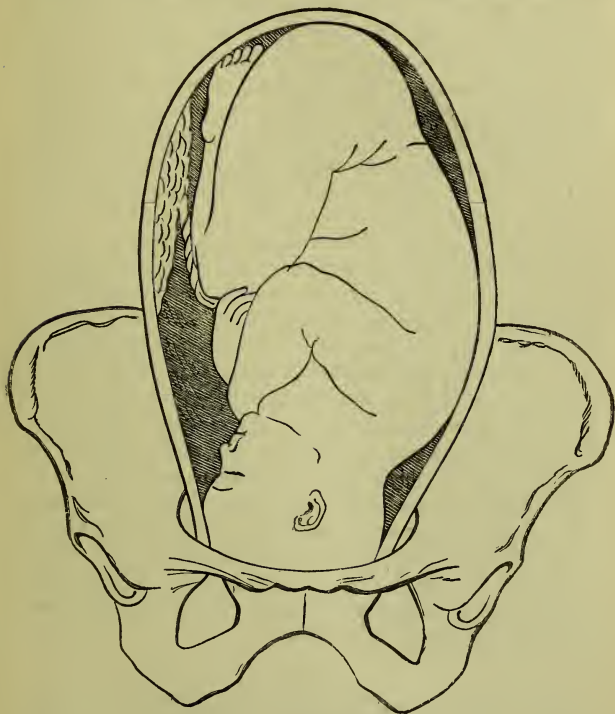


Fig. 6. Vertex presentation.

passage of the head is in one direction, and, in another part, in another. The skull can be adapted to the shape of whatever section of the pelvis it may be passing through, in two sorts of ways. In the first, this adaptation is brought about by a twisting or rotation

of the head from side to side, whereby its diameters are brought into more favourable relation to the diameters of the pelvis ; and, secondly, by a backward or forward movement, another and differently shaped portion of the vault of the skull may become the presenting part. The movable attachment of the head to the neck, or cervical portion of the spinal column, permits movements in various directions without the trunk necessarily taking part in them. It can twist itself, or be twisted, to a certain extent : on its perpendicular axis, that is, the face can be turned to one or the other shoulder ; on its direct axis—running from front to back : that is, the head can be bent down towards one shoulder or the other ; and at last most freely on its side-to-side or transverse axis : that is, it can bend itself forwards with the chin upon the breast, or stretch itself back, with the back of the head upon the neck. In the second, the shape of the skull can be changed by the pressure of the pelvic walls, without any change in its position or direction, as the bones, owing to their loose attachment to each other, can be pushed one under the other, and, owing to their softness, their form can be changed,—that is, they can be flattened out, or they can be more sharply curved. This second method of adapting the skull to the shape of the pelvis comes into use principally where there is a considerable disproportion between the size of the head and the roominess of the pelvis, which cannot be sufficiently adjusted by changing the position and direction of the child's head.

§ 91.

The midwife may conjecture that there is a vertex presentation when by external examination she finds that the womb is regular and oval in form ; that in its fundus she is able to feel a large, irregular, heavily moving portion of the child (the breech), and near this smaller portions (the feet) ; and when she hears the sounds of the child's heart most plainly on the right or

left side, below the navel. When the abdominal walls are sufficiently yielding, and the tension of the uterine walls is not too great, she may be able to grasp a larger or smaller part of the child's head between her two hands, according to the proportion that lies above the pelvic inlet. On examining internally, she recognises the head presentation by the size, hardness, smoothness, and roundness of the part that lies nearest, and which, when it is above the pelvis, is usually very movable. When it is lower down, she will be able to distinguish a suture, or a fontanelle, through the dilated mouth of the womb, or through the canal of the neck—occasionally even through the vaginal dome.

§ 92.

There are two kinds of regular presentations.

In the first, the back and back of the head of the child are turned towards the left side of the mother; the buttocks and feet will usually be felt in the fundus, towards the right side, where also the pregnant woman herself most frequently feels the liveliest movements. From the breech the trunk can mostly be followed down towards the left; so that when the womb is felt by both hands at the same time, it is felt to be less compressible on this side than the other. The sounds of the child's heart are heard most plainly on the left side, about midway between the navel and the anterior crest of the ilium.

The point of time at which the head enters the pelvis, as we have said, varies. It may be found, at the end of pregnancy, wholly or in part in the pelvis, encircled by the lower segment of the womb; or it may enter the dilated canal of the neck of the womb earlier or later during labour, and enter the pelvis along with it, sometimes enclosed within the uninjured membranes, and pushing the distended fruit-bladder before it, and sometimes only after the rupture of the membranes and escape of the waters. Whether the head enters sooner or later, the mode and method of entrance are

in all cases alike. As in a regular presentation the top of the child's head lies over the internal mouth of the womb, the child enters the brim of the pelvis with that part in advance, and in such a manner that the direct diameter of the head, being the longest, fits itself into the transverse (side-to-side) diameter of the pelvis, this being the longest; whilst the transverse diameters of the head fit into the shorter direct one of the pelvis. This position is the rule even where the back of the child's body does not exactly face the side of the mother. The examining finger first comes into contact with the right parietal or side bone of the skull, which lies lower than the left; so that the *tuberosity*, as the prominence is called, can be easily felt by the finger behind the pubic bone. The side fontanelles and ear cannot yet be reached. Passing the finger in a straight line backwards from the parietal bone, it reaches the sagittal or arrow suture, which usually runs transversely across the pelvis, a little behind the middle line. Gliding the finger along this suture, to the left it reaches the lesser, and to the right the greater fontanelle. Occasionally both fontanelles are equally easy to reach, but usually one stands lower than the other; and at the commencement of labour, when the narrowness of the mouth of the womb will not allow the presenting portion of the child's head to be felt over its whole extent, only one of them can usually be felt. Generally the back of the head points exactly sideways; occasionally, however, it may be a little forwards, more rarely backwards, so that the suture runs slantingly across the pelvis. As the head advances, the back of it sinks deeper down at first, whilst the forehead is kept back by the opposite pelvic brim (rotation of the head on its transverse axis—nodding), and then turns itself gradually to the front (it turns on its perpendicular axis). If the head has reached the middle of the pelvic cavity, the back of it will be found turned towards the left *oval opening*, and the forehead towards the right ischiatic

notch; the suture crosses the pelvis in the right oblique diameter. The nearer the head approaches the outlet of the pelvis, the more the back of the head twists to the front from the left, whilst the forehead slides backwards into the hollow of the sacrum; the suture then runs nearly in the direct diameter of the pelvis. The back of the head is now driven under the pubic arch as far as the neck; and whilst arrested behind the symphysis pubis, the front of the head is forced deeper and deeper, the coccyx bending backwards at the same time, until at last both forehead and face advance over the perinæum.

The reason why the head turns on its perpendicular axis, after it enters the pelvis, in the manner described, is this—that within the pelvic cavity the greatest dimensions are from before backwards, instead of from side to side, as is the case at the inlet. The direct diameter of the head finds room within the pelvic cavity the more easily, therefore, the more it rotates out of the cross into the direct diameter of the pelvis. Towards the pelvic outlet, however, where the direct diameter has again diminished, and equals that from side to side, the back part of the head which is advancing can now slip through the opening under the pubic arch. Afterwards, whilst this is firmly arrested here, the resistance which the tip of the coccyx and the floor of the pelvis offer to the advance of the top of the head and brow forces these parts also forward towards the entrance of the vagina; and in the vulva the head turns again on its transverse axis, in the direction opposite to that in which it turned on its entrance into the pelvis (the head is thrown back). This movement, and at the same time the expulsion of the head, is completed by the withdrawal of the distended perinæum, which has been stretched to the utmost, over the brow and face, by which they are allowed to advance into the world.

After the head is born, the neck of the child is still lying within the genital canal of the mother, the

back of the neck directly under the pubic arch, the chest and shoulders in the pelvic inlet (mostly somewhat askew), the right shoulder above the right oval opening, the left in front of the left sacro-iliac articulation. As the trunk advances, the right shoulder turns more and more to the front, whilst the left glides backwards into the hollow of the sacrum. The expelled head follows this turn of the trunk; the face therefore turns towards the mother's right thigh. The right shoulder is now pushed forwards under the pubic arch, whilst the left advances over the perinæum, whereupon the remaining parts of the body are born facing the same way. The arms are either born folded on the breast, or extended down by the side. Sometimes, in consequence of a so-called over-rotation or turn, the shoulders are found in the birth in the right oblique diameter of the pelvis. In this case the head turns with the face towards the mother's left thigh, the left shoulder advances under the pubic arch, and the right over the perinæum.

§ 93.

All this is reversed in the second position of the head. The back of the head and back of the child are turned towards the mother's right side; buttocks and feet lie more towards the left in the upper part of the womb; the trunk can be followed down from here towards the right, the uterus being less compressible on this side. The sounds of the child's heart are to be heard most plainly on the right side, midway between the navel and upper spine of the ilium. The left parietal or side bone, lying in front, is the lowest; the smaller fontanelle towards the right, the greater towards the left. At the commencement of labour, the back of the head is usually turned a little more backwards, so that the suture crosses the pelvis obliquely from the back of the right ilium to the left pubic bone. In the further course of labour, the back of the head turns from the right towards the front, the suture

rotates from the right oblique to the transverse diameter, and from this to the left oblique, and at the pelvic outlet very nearly runs directly from front to back. As the shoulders pass through, the face turns towards the mother's left thigh; the left shoulder advances under the pubic arch, whilst the right passes over the perinæum. An over-rotation, or twist, takes place here rather more frequently than in the first position, so that the shoulders are, in the birth, in the left oblique diameter of the pelvis.

The second position is much less frequent than the first.

§ 94.

Should a scalp tumour be formed during the passage of the head through the pelvis (*see* § 83), its situation will depend on the presentation and the stage of the labour. Thus in the upper half of the pelvis, in the first position it will be on the right, and in the second on the left parietal bone. The farther the head will have advanced into the pelvis when the tumour is formed, the more will the occipital or hinder bone of the skull be covered by it; and in the pelvic outlet it will extend to the parietal bone of the opposite side also. When the head is born, the skin over the tumour seems of a blue colour. By this blue colour the midwife may identify the spot where a tumour has existed earlier in labour, even if it have disappeared during the course of it.

So long as the pelvis is roomy, no considerable overlapping of the bones of the skull takes place in a natural labour. When, occasionally, whilst the head is lying transversely in the pelvic inlet, the hindmost parietal bone is pushed under its neighbour, this underlapping usually disappears completely as the head descends into the lower part of the pelvis.

CHAPTER V.

THE DUTIES OF THE MIDWIFE IN CONNECTION WITH
REGULAR LABOUR.

§ 95.

The assistance the midwife has to offer in regular labour is comprised in the following: she looks after the comfort of her charge, lightens her burdens as much as possible, and keeps up her spirits by sympathetic encouragements; moreover, she wards off everything that can injure, as much as lies in her power; and, after the labour, she undertakes the performance of the first duties both to the mother and the child.

It is not every labour that runs a regular course, and even in labours that have begun as regular, irregularities may set in that are dangerous to the mother or the child. The midwife must become familiar with these possible irregularities, so that if they merely threaten, they may perhaps be warded off; and if they are actually present, she may recognise them early, so that she herself may render assistance as far as the handbook permits her, and, above all, that the timely assistance of a medical man may be procured.

The chief duty, then, of the midwife, at a regular labour, is, from the very beginning, to make herself perfectly conversant, by an accurate examination, with all the conditions that can have any important bearing on the course of the labour, and by continued observation to assure herself that its natural course suffers no disturbance.

§ 96.

At every labour the midwife should take with her in a special receptacle the following instruments and appliances:—

1. A syringe, with a vaginal tube for syringing out

the vagina, and two nozzles for injections into the bowels. 2. A female catheter. 3. Navel-scissors. 4. If possible, a thermometer. 5. Thread, or narrow tape, for tying the cord. 6. A box with a dozen cotton balls about the size of hens' eggs, with a thread attached, for plugging the vagina. 7. A glass with carbolized oil (*see* § 403) for oiling the finger. 8. A bottle containing Hoffman's Drops or sal volatile.

After using her instruments at any time, the midwife must always clean them carefully ; and the metal parts, when they have touched matterly discharges or foul substances, must be boiled, and afterwards oiled with the carbolized oil, and then washed with warm water, as such things as matter and putrid discharges easily set up dangerous sicknesses, especially when passed over any sore spot in the genital passages. She should keep all these instruments in their own particular bag or satchel, and this should always be placed in one part of the house, so that when a summons comes she has everything ready and everything together, and she can take them with her without delay.

§ 97.

The midwife should go to no woman in labour without first washing and cleansing her hands properly. She must be very careful not to defile them with anything putrid, as these injurious substances are even more readily conveyed to sores in the genital passages by the hand than by instruments. If, therefore, she cannot avoid touching such dangerous things, she must immediately afterwards wash her hands, brushing them carefully, after having first, as with the instruments, oiled them thoroughly with carbolized oil ; and this cleansing must be repeated several times during the following days, especially if she is called to a labour. If she has to examine a woman suffering from an offensive discharge from the genital passages, whether the patient be a pregnant woman, woman in labour, lying-in woman, or one suffering from sickness, she will do

well to oil, not only the examining finger, but the whole hand, previously, as she will then be certain that careful washing will completely remove the harmful liquids from every spot that can have touched them. She must be not less careful in washing and cleansing herself when she has visited persons suffering from infectious diseases, such as child-bed fever, erysipelas, small-pox, etc. She must then change her clothes before venturing to go to a woman in labour or lying-in.

[The danger of a midwife conveying the disease from an infectious case to a woman in labour is so great that many authorities are of opinion that no person should undertake a fresh case of midwifery whilst attending one that is infectious. At any rate, the utmost care and watchfulness are called for. We would recommend that after examining or in any way touching a patient suspected of suffering from any disease capable of being conveyed to another, the midwife shall wash and brush her hands thoroughly in plenty of clean water with soap—running water from a tap if possible—and afterwards rinse them well in more clean water, to which a few spoonfuls of Condyl's Fluid have been added. The brush, but no soap, should be used for the Condyl and water, as the soap would render the disinfectant inert.]

§ 98.

If the midwife comes to a woman in labour shortly after its commencement, whilst the pains are still weak, and before the waters have escaped, she must make use of the examination as an opportunity of getting information concerning the points shortly to be mentioned. If, however, the pains be already strong, and if they become of a bearing-down character, or if the waters have already escaped, she must immediately make an examination to inform herself as to the stage of labour, and, above all, as to the position of the

child, that she may adopt the course proper for the occasion.

The points upon which her attention should be directed are the following:—

1. The duration of the present pregnancy. The midwife therefore asks when the courses appeared last, when her charge first felt the movements of the child, and if she has noticed a sinking of the belly, and, if so, when it was noticed.

2. The condition of the woman's health during the pregnancy, and at what part of the belly she feels the child's movements the most.

3. The stage of labour, and its course up to the present; the time when the pains set in; their frequency; the degree and situation of the *pain*; if it confines itself to the time pains are on, or if it remains during the intervals; if the waters have already escaped, and, if this is the case, at what time and in what quantities, and if the flow still continues.

4. In women who have borne children, the midwife must inform herself as to the course of the previous labours—particularly how long they have lasted, at what period the waters have escaped, the character of the pains, whether the child's head came first, if it cried immediately, if it was large or small, etc. A knowledge of these matters is desirable. But the midwife must not resign herself to a false security in the case before her because previous labours have had successful issue, nor, on the other hand, to a perhaps ungrounded fear, as circumstances are not always alike; she should rather examine and observe with equal care in both cases.

§ 99.

With the exception of those cases in which the waters have escaped and forcing pains have set in before the arrival of the midwife, she should always begin by examining externally. She proceeds on the lines laid down above (*see* §§ 58, 59, and 91 to 93). She

must be particularly careful to ascertain whether the shape and situation of the womb are natural ; whether the child occupies a natural position within it ; whether the sounds of the child's heart are heard in the usual situation, and whether they are heard distinctly. The position of the child can only be ascertained when the walls of the uterus are relaxed—that is, in the intervals between the pains. On the other hand, however, the shape of the womb is shown most distinctly during a contraction, when the walls are firm. It is by this perceptible hardening of the womb that the midwife ascertains that pains are actually present. (*See* § 75.) To judge of the goodness of the pains, she notices especially whether the womb becomes uniformly hard during one, whether the hardness comes on and goes off gradually, and, finally, its degree and duration. (*See* § 76.) The effect of the pains upon the placental murmur, as well as upon the sounds of the child's heart, has already been mentioned. (*See* § 86.) In the meantime the midwife should be careful to ascertain whether the sounds of the child's heart undergo any change in the intervals between the pains as labour advances. It is important also to notice the bladder, which, when distended with urine (retention of urine), may be felt as a globular swelling above the pubes more plainly during a pain, when it is pressed forwards by the hardened womb which lies behind. A somewhat similar swelling is occasionally formed by loops of intestines, which get forced between the womb and the abdominal walls after the discharge of the waters. This swelling can be distinguished from the other, however, by the clear tone it gives when tapped with the finger.

§ 100.

At the internal examination the midwife must direct her particular attention to the following points : where the mouth of the womb lies ; if, and how much, it is dilated ; the condition of its edges ; if, and how widely,

the cervical canal is opened out, and, if it will allow the passage of the finger, whether the presenting part of the child is covered by the membranes (this will be known by their smoothness); whether the fruit-bladder, when it is present, contains much or little water; and, above all, what part of the child presents. If she cannot make herself sure of this,—either because the part lies too high, and is too easily moved, or because the bladder of waters is too fully distended to allow it, or because she cannot reach any part of the child even after attempting to bring it nearer by pressing with the other hand above the pubes externally,—then she must not rest contented, unless a careful external examination has convinced her that the position of the child is natural, but should immediately summon a medical man. In every case she must strive to ascertain the position of the child before the rupture of the membranes. The midwife will do well to make the internal examination when the pains are off, because then it is easier to gain information on the points in question. But she must make one afterwards, when a pain is on, in order to note their effect on the presenting part of the child, on the fruit-bladder, and on the neck and mouth of the womb. But she must go to work with particular care here, and avoid dragging the mouth of the womb, or using force against the distended bladder of waters.

How often the examination is to be repeated depends on circumstances. The more thoroughly she has made herself acquainted with the state of everything that can have any bearing on the case, the more secure she is in her position. She must never omit a needful examination for the sake of indulging her patient; but it is equally important not to forget that every needless examination is not only troublesome to her charge, but is also an injurious irritation of the genital passages. During the stage of dilatation, when everything is right, as a rule, the internal examination need only be

repeated when the midwife judges, from the strength and frequency of the pains, that an advance has been made. But where doubts arise as to the position of the child, or where there is a possibility of its going wrong—as, for instance, when the head remains movable above the pelvis—an examination should be made more frequently: in the first case, to make certain; and in the second, that anything wrong may be noticed as it arises. With all this, the external examination should never be neglected, as this, performed with care, often reveals the true state of affairs earlier than the internal.

§ 101.

Even when the patient assures the midwife that her bowels have been opened recently, an injection of warm water should nevertheless be given in the stage of dilatation; and if there is costiveness, a teaspoonful of salt or sugar should be added, for the lower intestine is almost always more or less filled, and a thorough emptying of it is very desirable, not only for the labour, but more especially for the lying-in period. The patient may make use of a night-chair, or chamber utensil, before the rupture of the membranes; but afterwards a bed-pan, or some similar vessel, should be used, as it sometimes happens that she is surprised by the birth of the child in the very act of emptying the bowels.

§ 102.

For the rest, the midwife has nothing further to do in the stage of dilatation than make everything ready for the mother and child: to prepare the bed, to see that hot and cold water are at hand, also napkins, a waterproof sheet under the patient, the child's clothes, hot-water bottles, a bed-pan to receive the waters, urine, or motions, a pan for washing the child, and, in case of need, a little wine, brandy, or rum. She should then look through her own instruments again, and arrange them properly, so that they may be at

hand the moment they are required. Then she takes care that the air in the room is fresh and moderately warm, and removes everything from the room that can possibly cause a disturbance, such as animals, children, and needless bystanders and things. It is naturally desirable that one of the friends of the patient should be present to render assistance.

§ 103.

A plain bed is most proper for labour. It should be sufficiently firm. The most suitable one is a mattress stuffed with hair or straw. The patient sinks too deeply into a feather bed; it is also too hot, and on this account not fit for the lying-in period. Suitable folds of sheets should be spread over to protect it from the waters, blood, etc. A good arrangement is to spread out a layer of oilcloth, or other waterproof cloth, and over this a piece of flannel, and above this again folds of soft linen or calico. The bed should neither be too near the fire nor the window; in case it is required, it should be protected by a screen. It is very desirable that the bed should be placed so that it can be got at from both sides, on account of the examinations, and so that the assistance can be freely rendered.

§ 104.

In the commencement of the period of dilatation it is not necessary that the patient should continue in bed; when she is otherwise healthy and strong, and the head is already in the pelvis, she may walk about, stand, sit, or lie down, as she pleases. It is better, however, for her to lie down from the commencement if she is sickly or weak, or if the head lies movable above the brim, if the presentation is irregular, or if no part can be felt from the vagina. As a matter of course, she must be in bed if there should be anything particularly wrong; for instance, if there should be flooding, etc. She herself usually desires to get into bed when the pains get stronger, and the fruit-bladder

presses forcibly on the mouth of the womb. Even when in bed, unless something special renders a particular position necessary, she should have freedom to change her position on the bed occasionally, and to lie upon her back or upon her side as she pleases. Such a change of position is not only a great relief in a lingering labour, but it occasionally has a good effect on the pains. Notwithstanding, the midwife must never suffer a restless tossing to and fro. In like manner, *she must not permit the patient to bear down during this stage of labour; much less must she direct her to do so in the expectation of hastening it.* For so long as the mouth of the womb does not permit the passage of the child, these efforts only force the whole womb lower down into the pelvis, a premature rupture of the membranes easily takes place, and in every case the strength is spent in vain. *It is still worse for the midwife to attempt to advance the labour by dilating the mouth of the womb with the finger.* Such attempts are not only wearying and painful to the patient, but they are positively injurious, for they endanger the fruit-bladder, and may disturb the activity of the pains. If the sufferer is impatient or faint-hearted, the midwife should encourage her; she should exhort her to be patient, and comfort her by telling her that the further progress of the labour and lying-in are generally more favourable if the period of dilatation is not too rapid.

§ 105.

The clothing of a woman in labour should be sufficiently warm, but at the same time light and easy, wherefore the midwife should see that the garters are taken off, and all tightly fitting parts of the clothing loosened; the hair should be arranged and covered with a light cap, and the rings removed from the fingers. The night-gown should be drawn up the back, and carefully rolled up, to prevent its getting wet and dirty.

Solid food is not borne well during labour, and the

appetite diminishes as the pains begins to get severe. On the other hand, the patient has a frequent desire to drink. The thirst is best relieved by cold water. If the labour is lingering, it is well to give the patient a little beef-tea or mutton-broth from time to time, or a little wine and water.

§ 106.

Every woman in labour should be often admonished to try to pass her urine. If she cannot do this lying down or standing up, she should try if she can do it on her knees and elbows. If the head of the child presses too strongly upon the urethra, the midwife should push it carefully back a little with the finger. If she cannot pass it now, and the soft tumour previously described can be felt above the pubes, the urine must be drawn off by the catheter (*see* § 406). This should not be put off too long, as it is more difficult to accomplish when the head is low down in the pelvis.

§ 107.

The patient must be made to lie down towards the end of the stage of dilatation in every case if she has not done so before. Previous to this, the time for the rupture of the membranes cannot be determined with any certainty (*see* § 80). As soon, however, as the fruit-bladder remains on the stretch between the pains, the midwife must be prepared for its rupture during any of the following ones. On this account she should prepare the minds of those who are bearing their first child for the strange event, and also take care to prevent the soaking of the bed. Coming now to the end of the period of dilatation, she lets the patient take an easy position on her back or left side,* and then places a napkin before the genitals to receive the waters. As they escape, she should take notice of their quantity and character, especially to see if there is any *meconium* amongst it, as the contents of the child's intestines are called.

* In this country that on the left side is always adopted.—TR.

§ 108.

After the escape of the waters, the midwife should make an internal examination immediately, to ascertain the condition of the mouth of the womb, and especially the position of the child's head. This is the most proper time for the vaginal examination, for up to this period the examination will often have been prevented by the resistance of the mouth of the womb, or the tension of the membranes, whilst later the formation of a scalp-tumour will hide the sutures and fontanelles. At this examination the midwife should not remain satisfied with simply knowing that the head presents, or that it is lying in the first or second position; she must also ascertain how it presents—that is, whether both fontanelles are on a level; if not, which is the higher; in what direction the suture crosses the pelvis; whether it passes through the middle of it, or nearer the front or back wall; or whether there is any other part of the child along with the head—as a hand, the navel cord, or even a foot.

§ 109.

From this time the patient should not, as a rule, leave her bed; but unless circumstances forbid it, she may still change from side to side. Only if the labour should be very lingering, and everything else be right, especially if the head is in a good position in the pelvis, she may be allowed to get out of bed later on, and remain out a short time. In no case, however, should she go to the night-stool if a strong desire to open the bowels should come on. (See § 101.)

From time to time, as the character of the pains leads the midwife to infer a more rapid or slow progress, the examination should be repeated. By external examination, which is still of great service to her, she ascertains first the amount of waters retained within the womb; she decides upon this point by the more or less

regular tension of the uterine walls, the greater or less regularity of form, and the more or less freedom of movement of the child within the womb; and, secondly, whether the sounds of the child's heart retain the same frequency and strength between the pains; by the vaginal she judges of the advance of the head and the withdrawal of the mouth of the womb; whether the head is undergoing the proper rotations, whether the bones of the skull push against one another in the sutures, and whether the skin of the scalp runs into folds, and a tumour forms. *The depth to which the head has sunk in the pelvis is best known by noting how far it fills the hollow of the sacrum.* So long as this is empty, a great portion of the head remains above the brim, even although the half lying in front may have sunk pretty far behind the pubes.

§ 110.

As the head passes through the mouth of the womb into the vagina, a strong inclination to bear down during the pains sets in. As this bearing-down is really helpful to labour, the midwife should seek to make it easier to do. For this purpose she puts a footstool or hard pillow at the foot of the bed for her patient to fix her feet against. The bearing-down is most effective when the woman is on her back. (*See § 77.*) Nevertheless the midwife should see that she lies still, and neither throws back the head nor raises the hips. Naturally the bearing-down should only last as long as the pain. It is only rarely necessary to tell the woman to bear down; more frequently it is desirable to warn her not to force too much. However, where the passages are roomy, and the head occupies a favourable position in the pelvis, but where the labour does not advance owing to weakness of the pains, and there is no inclination to bear down, or the patient restrains herself, from awkwardness, or fear of the pain it causes, then she can be told to do so, and properly instructed in the way.

§ 111.

The nearer the labour approaches the end, the more carefully must the midwife watch over its progress, by examining more frequently, so that she may not omit supporting the perinæum at the proper time; for from the moment the advancing head begins to press upon the perinæum, her principal attention must be directed towards guarding it from rupture as the head passes over it. To gain this object she must *take care that the head passes out very slowly*, as the maternal parts allow of greater distension in proportion as the distension takes place slowly; further, she must take care that the head advances in the best possible position and attitude, and that it passes through the genital fissure in its smallest possible diameter; and, finally, that it does not come through at the height of a pain, when the tension of perinæum is at its highest.

The midwife now proceeds in the following manner to the end:—

1. *She strictly forbids any bearing-down during the pains*; she takes the support away from the feet; and in place of keeping her on her back, she turns her on to the (left) side, with the knees drawn up to the body, and kept a little apart by a cushion between them. Lying on the side has this advantage—that the patient cannot bear down so violently, that the perinæum is not so loaded with the weight of the child in passing out as in lying on the back, and that the midwife, standing behind her patient, can get at all the parts more conveniently, besides having the perinæum and genital parts in sight.

2. The midwife supports the perinæum with the right hand when the woman in labour is on her left side. She separates the thumb from the fingers, and covers the perinæum with the palm of the hand in such a way that the edge of distended skin between the thumb and the first finger lies just behind the fourchette.

The midwife need not support the perinæum until it is put fairly on the stretch ; she only keeps her hand in readiness, and watches the degree of tension during the pains. As soon as this becomes great, she presses evenly with the whole surface of the hand against the whole breadth of the perinæum, backwards and upwards—that is, in the direction of the hollow of the sacrum. By this pressure, a too rapid advance of the head, and a too sudden distension of the genital fissure and perinæum, are prevented. Secondly, the effect of this is to bring the back of the head well forwards under the pubic arch, and to fix it there so that the head advances through the vulva in its smallest diameter (small oblique diameter). (*See* § 45.) For, as the pressure of the hand first of all comes upon the front part of the child's head, and keeps it back, and thus forces the chin more firmly upon the breast, so the opposite pressure of the pains from above presses the back of the head more deeply under the pubic arch. The degree of pressure is regulated by the strength of the pains and the tension of the perinæum. Moreover, the midwife presses during the pains only at first ; but when the head distends the genital fissure to a high degree between the pains, she then presses between them, but more moderately. If the head is driven forwards with great force, it is well for the midwife to keep it back with the first and second finger of the other hand, passed in front of the abdomen. When at all possible she should keep the head back as long as the pain lasts if the back of the head is well under the pubic arch, and the great fontanelle has passed the anterior edge of the perinæum ; and, above all things, she should strive to prevent the head breaking through at the height of a pain, when the perinæum is at its utmost stretch. If the midwife feels that the perinæum draws itself back, she should follow it carefully, and let the head pass over it. Even after the birth of the head, pressure must be kept up upon the perinæum in moderate degree, until the shoulders

have passed, as a rupture of it may still occur, or an existing one be made larger. This easily occurs if the arm that lies behind is bent at the elbow.

If the patient cannot lie on her side, the midwife may allow her to lie on her back—*more or less flatly, according to the greater or less slope of the pelvis*. The loins should be put on the stretch a little by a pillow underneath the sacrum, so that the genital opening looks straight forwards, and the region of the perinæum lies free. The knees should be slightly bent, and only moderately separated. Then the midwife, sitting by her side, supports her perinæum by laying the hand flat upon it, in such a manner that the fingers extend towards the seat, and the ball comes to lie on the front border.

§ 112.

As soon as the head is born, the midwife feels if the cord is round the child's neck. This is not unfrequently the case, and occasionally more than once. If there is only one loop round the neck, and that is loose, it is pushed back over the shoulders as the trunk is born. If wound round more than once, she should try to get the folds over the head one by one; and to get enough of cord to do this, she may draw down the end that she supposes is attached to the placenta. If, however, the cord is so tight that the child's face gets blue, and it is in danger of being strangled, she should divide it carefully with the scissors; then, seeing that the cut ends are held fast, she should endeavour to bring the child into the world at once, in the manner to be pointed out immediately; then she should tie the cord. But if, as is often the case, the child's body is driven forwards so rapidly that the midwife has time neither to uncoil nor divide it, then she should press the child's head against the crest of the pubes, as by this means the cord will be stretched to the least possible extent, and then when the child is born she uncoils it.

§ 113.

After the birth of the head, the midwife must at once attend to its breathing: she must see that the nose and mouth are free, and that the mucus runs out of its mouth. She should strive as much as possible to keep the child's eyes from coming into contact with the discharges of the mother. If the cord is not round the child's neck, her second hand, which has not been used in supporting the perinæum, is free; this she lays upon the fundus of the womb; she follows it down as it diminishes in size by the expulsion of the trunk, and holds it for a minute or two thus in her grasp, if the child does not require her help, to make certain that it is well contracted.

The midwife must not drag at the child's head under any circumstances, but must wait till the following pains expel the trunk. But if the pains should fail, and the child's face become blue and congested, or if the cord has been divided under the circumstances mentioned above, then the midwife should endeavour to excite pains by rubbing the fundus of the womb, and tell her patient to bear down. If this does no good, she must not drag at the child's head or neck, *but she may hook her forefinger from behind under the shoulder that lies behind, and carefully pull it over the perinæum. If the shoulder that lies in front can be reached more easily, she can hook the finger into the armpit of this in the same way, and draw it out by pulling gently downwards and to the side.* When one shoulder is born, the other follows easily. In pulling the shoulder forwards, she must avoid taking the child's arm away from the chest, lest this movement should cause the tip of the elbow to tear the perinæum.

§ 114.

Neither should the midwife pull out the remaining parts of the child, unless there should be occasion, as, in view of the after-birth period, it is very desirable

that the whole child be expelled by the uterine contractions alone.

The child, now completely born, is laid upon a dry warmed cloth or flannel, on its side, with its face towards its mother, and not removed farther from the maternal genital parts than the length of the cord will allow without stretching.

§ 115.

If the child is lively, and breathes and cries properly, the midwife leaves it attached to the mother a few minutes (*see* § 86) whilst she feels the womb externally, to convince herself that it is well contracted, and that it does not contain a second child.

If she finds everything in order, and if in the meantime the pulse has become weaker in the cord, or disappeared altogether, she then proceeds to the operation of "*tying the cord.*" This she does, about four finger-breadths from the navel, with strong thread or narrow tape, tying on one side a simple knot, and on the other a knot with a bow, and then divides the cord about two-thirds of an inch from the thread. She should never use woollen yarn or weak thread. The thicker the cord is, the more tightly it must be tied, as otherwise the thread will loosen, and bleeding may set in; on the other hand, a thin cord might be cut through by being bound too tightly. In tying the cord, the midwife must take care that neither the child's navel nor the placenta is dragged. This can easily be done by pulling at the end too violently, or the thread itself may break. For this reason the midwife should not generally use the strength of the whole arm, but only such a force as can be obtained when the knuckles are pressed against each other. As the cord is being cut through, she must keep the part to be cut in the hollow of her hand, so that the limbs of the child shall be secured from danger of being cut, whatever sudden movements the child may make.

Tying the cord in two places, so as to divide it

between the two, is unnecessary in simple labours, as far as the child is concerned, and has only this advantage, that the bed is not soiled by the blood flowing out of the untied end.

§ 116.

After the child has been separated, the midwife wraps it in a warm flannel, and either hands it to an intelligent assistant, or lays it in a safe place, well covered up, in order to assure herself again that the mother does not require her first care. For the purpose of examination, as well as for the sake of rendering assistance, it is well for the patient to turn on her back again, when the thighs, which have been separated, must be brought together again. *If the womb is felt like a round hard ball below or above the level of the navel, if only a little blood flows from the genital passages, and that in little gushes, if the woman is well and feels moderate pain at most during a pain, then the midwife should turn her first attention to the child,* after she has, however, put a dry, warmed napkin to the vulva. *She should never forget that the expulsion of the after-birth is a natural process, sometimes completed in a shorter, sometimes in a longer space of time,* and that it usually has a favourable termination if not untimely interfered with. Whilst the child is being attended to, she must not forget to observe the mother, and to see from time to time if more blood is coming away, or if it is flowing interruptedly. The mother herself must keep very quiet, and not talk much.

§ 117.

The first thing the midwife has to do to the child after the cord is divided is to wash it. The best thing to do this in is a small pan or basin, and warm water should be always ready to wash it with. There should be as much water in the pan as will cover every part of the child but the face. The temperature should be about 94° Fahrenheit. If the midwife uses her own thermometer, that she uses for taking the tem-

perature of the body, she must not have the water too hot, or it will crack the instrument. If no thermometer is at hand, she must judge of the heat by dipping her elbow in the water. It should only be warm enough to be pleasant. *The midwife should never judge of the temperature by the hand alone.*

In washing the child, the midwife should always begin with the eyes, rinsing them carefully with clean, cool water, and drying them with a fine, soft linen cloth. This cloth must be washed out before being used again. The midwife should never use the water intended for the bath for the eyes.

The body of a new-born infant is often covered by a curdy slime, that sticks fast to the skin; however, if it is rubbed with a little oil, unsalted lard, or yolk of egg, on a bit of woollen rag, it easily comes off.

§ 118.

After the child has been carefully washed and well dried with warm towels, the midwife should examine it to see if it is perfect, or whether there is any imperfection in any part of the body; whether, for example, the urethra, or seat, is closed up unnaturally. If she finds any such imperfection, she must not tell the mother, but she must inform those belonging to her, and see about calling in a medical man.

She then sees that the tying of the cord remains perfect. After this she puts the stump of the cord between two folds of greased linen, and lays it on the left side of the belly. She then puts on the navel-binder, but not too tightly. In the further dressing of the child the arms must be left free, and the legs themselves need not be stretched out straight. The child should be protected from draughts, and the eyes from too strong light, during the washing and dressing.

The child, now dressed, is put into its bed, and always laid upon its side, so that the mucus that collects may escape from its mouth.

§ 119.

The midwife now turns her whole attention to the mother. By this time the placenta will usually have been separated by the after-pains, with a discharge of blood at each pain, and, together with the membranes, will be found lying in the vagina. The napkin before the vulva shows the quantity of blood that has been lost, and an external examination shows the degree of uterine contraction. *If she finds the womb decidedly smaller and harder, and its base lower down than before, she may hope to find the after-birth in sight within the vulva, or within reach, just behind it. If this is the case, she proceeds to remove it without delay.* To this end, supposing she is sitting at her patient's right hand, she twists the cord round some of the fingers of her left hand, and pulls it tight; she then passes the first and second fingers of the right hand along it to the spot where it ends in the placenta; she then presses the placenta backwards—against the sacrum at first, and afterwards in the direction of its curve (that is, parallel to the axis of the pelvis) forwards, keeping the cord on the stretch all the time, but not pulling at it. She then grasps the anterior border of the placenta with the right hand, and pulls it towards the vulva, at the same time twisting it round in the vulva several times, in order that the inverted membranes that come last may be twisted into a stronger cord, and not torn. If these should not come with a gentle pull at the placenta, the fingers of the right hand should be passed into the vagina again, and the cord of membranes grasped, and by pressing and pulling, gently conducted in the proper direction.

§ 120.

If the midwife finds that that part of the placenta into which the cord is inserted cannot be secured, nor felt immediately behind the genital fissure, she must not make any attempt to remove it; for in this case

some portion of the placenta is probably still attached more or less firmly to the womb, and any untimely dragging at the cord or placenta would be injurious. If there are no disquieting symptoms present, if the woman is well, and the blood flows interruptedly and in moderate quantity, *the midwife contents herself with sitting at her patient's side*, with her hand under the bedclothes, grasping the uterus from above, and watching over its contraction, and at the same time pressing the anterior wall equally and gently backwards. By doing this, and increasing the pressure when an after-pain comes on, a uniform and good contraction of the womb is encouraged, and consequently the separation of the placenta and its expulsion into the vagina. Then, if she feels that the uterus has become decidedly smaller during a good pain, she should see if the after-birth has come down far enough to be taken away. If she finds herself deceived in her expectation, she begins her watch over the womb again, and sits patiently until the placenta is completely separated and expelled into the vagina. But if the expulsion of the after-birth is delayed from one to two hours, notwithstanding this treatment,—even if there is no copious bleeding, and the patient is, and looks well,—a medical man must be called in.

§ 121.

Even after the after-birth has come away, the midwife must continue to watch over the womb, in the way pointed out, for some time, to make sure of a good permanent contraction.

After this she lays the patient on her side again, in order to cleanse the external genital parts, and to see if they have been injured. She wipes the blood off gently with a towel dipped in lukewarm water. To see how far a rupture reaches, supposing there is one, she should pass the forefinger carefully into the rectum, and press the anterior wall forwards, when the posterior wall of the vagina will become visible. Slight

ruptures that do not bleed much require no particular treatment; when the rupture is extensive, however, or when it bleeds much, she should insist on a medical man being called in at once. (*See* § 354.)

After the external genital parts have been made clean, the wet cloths underneath the patient should be exchanged for dry warm ones. If the body linen has been wetted unavoidably, the body of the patient should be protected from touching it by spreading dry warm cloths between. She again lays a clean napkin to the vulva. A binder is generally agreeable to the patient, but it should not be drawn too tightly.

Whilst all this is being done, the patient should lie quite still, and not sit up; and when she is turned, it should be done cautiously, as a severe flooding might easily follow.

If the patient must of necessity be removed to another bed, it should only be after a time; the bed must be thoroughly prepared and warmed, and brought as near to the labour couch as possible, and then, properly covered, she must be carefully lifted over.

§ 122.

After she has attended to the lying-in woman, the midwife examines the after-birth, carefully turning the membranes right side out again. If she finds that a portion of the placenta is missing, or a larger portion of the membranes (particularly of the chorion, or tuft membrane), she must let a medical man be called in, and keep the after-birth till he comes. The internal membrane (amnion, or water membrane) is not unfrequently separated from the middle one (chorion, or tuft membrane), and twisted round the cord. More frequently the chorion, with its covering of decidua (§§ 38 and 39), is torn from the edge of the placenta to a greater or less extent.

Even if everything has been straightforward, it is desirable that the midwife should still stay with the

newly delivered woman some hours,* as even now unexpected disturbances frequently occur, which are capable of becoming dangerous in a very short time if the needful assistance be not at hand. We shall speak of these later on.

She must therefore watch the condition and appearance of her charge observantly, without betraying any anxiety. She should feel the uterus from time to time, to see if it remains well contracted; and she should also look at the napkin, and feel the folded cloths underneath the patient, to assure herself as to the flow of blood.

SECTION III.

REGULAR CHILDBED, AND THE DUTIES OF THE MIDWIFE IN CONNECTION THEREWITH.

CHAPTER I.

THE CHANGES THAT TAKE PLACE IN THE FEMALE BODY DURING CHILDBED.

§ 123.

IN childbed, the changes, that have taken place in the genital and neighbouring organs during pregnancy and labour, are again set aside, as far as is possible, and the parts gradually return to the condition they were in before conception. In the breasts, on the other hand, the development that has begun during pregnancy advances, by virtue of which they are enabled to afford food to the new-born infant.

* Some hours may mean two or twelve. The midwife should never leave in less than half an hour, and then only if the uterine contraction, discharge, and pulse are perfectly natural.—TR.

§ 124.

In the first days of childbed, the womb still lies mostly above the pelvis, on account of its large size, and generally more to one side than another—most frequently to the right of the middle line. It gradually returns to its former size and shape, and, at the same time, sinks deeper into the pelvis. But even in the second week the top of it can usually be felt above the pubes. The principal means by which the uterus is diminished in size are the *after-pains*, or periodical contractions. With the first child they are usually painless, and can only be felt by feeling the womb. In those who have borne more than one, they are generally painful, and in many women are as much so as the proper labour pains, and last for days. At first the body and base contract alike, whilst the neck hangs down into the vagina, its mouth gaping wide, and the lips, which are soft and puffy, often fissured at the sides. By-and-by the neck contracts, its swelling diminishes, the mouth closes, and the vaginal portion can be distinguished again. If an examination is made towards the end of the second week, the womb will be found very much less, the greater part of it within the pelvis; and by the combined internal and external examination, it can easily be held between the two hands and moved about. The top of it is usually tilted forwards, the vaginal portion is still very short, and not unfrequently the finger can be passed a short distance up the cervical canal.

§ 125.

In the first days of childbed, the *lochia*, as the discharge at this period is called, are red and liquid, and occasionally interspersed with clots of blood. As the womb goes on diminishing in size, the blood-vessels in the part where the placenta was attached close up more and more, and the blood ceases; the lochia then become a dirtyish brown; from the fifth

or seventh day the discharge becomes a yellowish white, and mattery-looking; and from the ninth day it is only a milky slime, or mucus (white lochia). Whilst this is going on, whatever wounds there may be about the uterus gradually heal over, and become covered with a new mucous membrane. The duration of the lochial discharge varies from two to six weeks.

§ 126.

Side by side with the diminishing size of the womb, or *involution*, as it is called, its ligaments return to their old size; the vagina, distended by the pressure of the child, folds itself up; the greater and lesser *labia* contract, and become shorter; whatever wounds have been caused in the vulva, vestibule, or fourchette, during labour, heal over: the distended perinæum has usually returned to its natural size within the first twenty-four hours.

After about two months the parts have generally returned to their former condition, as much as is possible. But the womb always remains a little larger than before conception; the cavity is wider, the vaginal portion thicker, the mouth of the womb broader, more gaping, and usually more or less notched. The vagina also never regains its former narrowness and tightness; its walls remain softer and smoother than in the virgin state. Not unfrequently the genital fissure appears longer, in consequence of a rupture of the perinæum that has not united. The walls of the abdomen usually remain soft and puckered, and the so-called scars of pregnancy, mentioned above, are seen in the skin. (*See* § 52.)

§ 127.

The breasts have been prepared for the secretion of milk during pregnancy; and when the child is put to the breast, as soon after its birth as it ought to be, the milk generally comes gradually, and without any disturbance to the mother's health. But, frequently,

and particularly when the child has not been put to early enough, the breasts get too full on the second or third day; they swell, and become painfully distended; a shiver comes on, and afterwards a heat and sweat, —the so-called milk fever. In the first days the milk is scanty, thin, and yellow; later on, however, it becomes more plentiful, thicker, and whiter, and at the same time sweeter and more nourishing.

Women who have had a child, and especially when they have suckled it, are known by their more flabby breasts, with their prominent nipples; the breasts also have white streaks in the skin like those on the abdomen.

CHAPTER II.

THE NURSING OF LYING-IN WOMEN.

§ 128.

The midwife must bear in mind that every lying-in woman is to a certain degree exhausted, by pain, violent muscular efforts, and loss of blood; that she has a wounded surface on the interior of the womb, the spot where the placenta was attached; that the genital parts in general, together with the neighbouring region, have been more or less distended, pulled, and bruised; and that, not to mention more serious injuries, slight tearings of the mucous membrane of the neck of the womb, of its mouth, of the entrance to the vagina, and of the fourchette, are among the common incidents of labour. Further, when she considers the great changes that have taken place in the breast within a few days, she will easily see that every lying-in woman, even if she cannot be called ill, is yet more predisposed to illness than at other times, and therefore requires special consideration.

The midwife does not, of course, undertake the sole attendance in a lying-in room, as at the labour, but she should superintend generally, and give instructions as to how things are to be done. Her chief duty consists in keeping everything likely to do harm at a distance as much as possible, and in keeping an eye upon the different functions, so that any disturbance of them may be discovered at its commencement.

§ 129.

At first she should examine the abdomen at every visit, to satisfy herself that the womb is diminishing in size properly, and that it is gradually sinking into the pelvis. This examination need not cause pain to a healthy lying-in woman if she has no after-pain on at the time. During the first days of childbed the base of the womb lies immediately behind the abdominal walls; occasionally, however, the intestines come in front of it very early. If the midwife finds that the womb is larger and softer than it usually is at this period, she must pay special attention to the character of the lochia, particularly as to whether clots of blood come away with the after-pains, and whether the discharge has an offensive smell. If it has, she will do well to call in a medical man, as great danger might easily arise from deficient uterine contraction and the retention of clots of blood in the cavity, as they become fetid from the action of the external air, for any contact of putrefying material with a sore in the genital passages may be the cause of a dangerous childbed illness.

§ 130.

Wherefore cleanliness in every particular is of the utmost importance to a lying-in woman. The layers of cloths underneath the patient should be changed at least three times a day in the earlier days, and after-

wards, as the discharge diminishes, less frequently. At every change the external genitals should be cleaned with a linen cloth dipped in warm water,—this is best done whilst a bed-pan is under her,—care being taken at the same time that the body is not exposed unnecessarily. After being cleansed, the parts are again covered with a clean warm napkin. The cloth that has been used for the cleaning should be washed out immediately, and used for no other purpose.

Should there be sores on the perinæum, the labia, or the entrance to the passage, particular attention should be paid to their being kept clean; and should they become discoloured, or should they not heal up readily, notwithstanding every care as to cleanliness and bathing several times a day with warm water or camomile-tea (*see* § 405), a medical man should be called in. If the external genitals swell, as they often do, in consequence of such injuries, they should be covered with a cloth soaked in camomile-tea, and the application renewed every hour.

If the lying-in woman has a trained or skilful nurse about her, the midwife, after giving proper instructions, should allow her to undertake the changing of the bedclothes, the cleansing of the parts, and any bathing that may be required, under her own superintendence, so that she herself may keep her hands from touching any impurities. If the midwife is obliged to do it herself, she first changes the folded sheet that lies underneath, but without touching the part that has been soiled by the discharges. After this, she puts a bed-pan under her patient, and, before going any further, oils both her hands (*see* § 97). Of course she should not soil the bed-linen with oil, but this can easily be avoided with a little care. After attending to the lying-in woman, she should wash her hands carefully, as mentioned above (*see* § 97), as well as the vaginal tube, in case one has been used. Well-to-do lying-in women should procure an instrument of their own, if one is required.

§ 131.

For the purpose of keeping the air in the lying-in chamber pure and fresh, the upper sash of the window should be opened for a little while at least twice a day. Of course both mother and child should be protected from draughts. Moreover, everything that can render the air of the lying-in room foul should be avoided, particularly the drying of the child's napkins at the fire, the keeping of dirty bedclothes and unwashed chamber utensils, etc., in the room.

Besides this, an even temperature should be kept in the room,—too great a heat is injurious; and the room should not be too much darkened by window-hangings.

§ 132.

Every healthy mother with properly formed breasts ought to suckle her child, at least for a time; but it is difficult to persuade her to it if she feels no inclination thereto. If the mother does suckle it, she should put the child to after refreshing herself with some hours' sleep. The earlier and more regularly it is put to, the more easily and gradually the process of milk secretion sets in, and the less danger there is of milk fever. At the commencement, difficulties are often met with, particularly when the nipples are small and the child is weak; under such circumstances, great patience is needed. The mother lies upon the same side as the breast she is about to give to the child. Resting upon her elbow, she holds the child in the same arm, and draws out the nipple between the first and second fingers of the other hand. She must press the child boldly to, so that the nipple enters the mouth properly, and its lips touch the areola, taking care, however, at the same time that the child has space to breathe by gently pressing back the breast above the nipple. Every needless uncovering of the breast should be carefully avoided. The change from breast to breast should be made regularly. *Both before and*

after putting the child to, the nipples should be cleansed with a moist linen cloth, and dried carefully; the breasts are then covered with a four-fold linen cloth, which should be changed as often as it gets wet, and supported by a well-fitting bodice, but without injurious pressure.

If, on the second or third day, the overcharged, distended breasts will not permit the child to suck, some of the milk should be drawn out carefully with a breast-exhauster, before the child is put to. This condition may also be relieved by rubbing the breasts gently with warm oil.

The last-named means is made use of when the breasts swell, on account of the mother not being able or willing to suckle her child. Besides this, the breasts should be covered with wadding or tow, and gently supported by a bandage underneath.

§ 133.

Lying-in women generally have a tendency to perspire, especially in the first few days. This tendency is not equally great in all, and many perspire but little, without any disturbance of health. Although the midwife should not bring on perspiration in a lying-in woman artificially, on the other hand she should be chary of checking it; wherefore she should avoid causing a chill, and this is very likely to be caused by the breasts being imperfectly covered whilst giving suck, by want of care in cleansing the genitals or in changing the soiled or damp bed-linen. Fresh bedclothes should always be thoroughly dry, and well warmed through. Many women before their confinement put aside clothing that they have worn a day or a night, so as to be sure of its being well aired. If the clothing has been soiled with blood during labour, the changing of it ought never to be put off beyond the next day, if the condition of the lying-in woman allows of its being done. This can easily be accomplished without any injurious un-

covering or moving of the body, if proper care is taken. If the skin is very moist, it should be first rubbed down with a dry warm towel.

§ 134.

During the first three or four days the lying-in woman should take liquid nourishment, such as gruel, weak beef-tea or mutton broth, milk with biscuit or toast. From the fourth or fifth day she may take more nourishing but easily digested food, in small quantities, and so gradually return to her ordinary diet. The most suitable drink is fresh water, either by itself or with a little milk added; she must take care, however, not to drink too much at one time. Weak tea may be allowed; but coffee should be avoided at first.

Women who give suck generally require a stronger diet and more nourishing drinks sooner than others; for example, thin oatmeal gruel, or light mild beer. All indigestible, wind-producing, or heating foods should be forbidden during the whole time of suckling.

Women who do not suckle their children, on the other hand, should confine themselves to a spare diet until the breasts have returned to their ordinary size, and should be particularly moderate in drinking.

§ 135.

The midwife should admonish the lying-in woman to relieve the bladder regularly several times a day. In the first few days they are not unfrequently unable to do this, even when the labour has been natural and easy; and sometimes, through a false shame, are led to deny that this is the case, especially when the desire to empty the bladder is not very urgent. On this account the midwife should never omit to examine the bladder by feeling the lower part of the abdomen. If the bladder is full, the midwife will feel a soft tumour like half a ball above the pubes, generally inclined a

little towards the left, and the womb, even if well contracted, unusually high up, as, being still very movable, it is pushed up by the bladder. The midwife knows that the tumour is not caused by intestine, as this would give a hollow sound if tapped with the fingers. The tumour, or swelling, is not generally painful at first; but when the retention has lasted longer, and the bladder is distended, it becomes so. As long as the inability to pass urine remains, the midwife should draw it off twice daily with the catheter, first cleansing the orifice of the urethra, so that the catheter may not carry any of the discharge that adheres round it into the bladder. [Too much stress cannot be laid upon the importance of having the catheter perfectly clean, as well as the orifice of the urethra and neighbouring parts, as the introduction of a single drop of matter or decomposing material is almost certain to set up inflammation of the bladder. For this reason we think it better that the person passing the catheter should see the urethral orifice, and take great care that the catheter does not touch any other part of the patient than the one intended.] If the ability to pass it is not quickly restored, however, or if the midwife only comes when the bladder is painfully distended, a medical man should be called in immediately.

§ 136.

Lying-in women are usually inclined to have their bowels confined. Even if they are opened during labour, masses of fæces, collected during the pregnancy, usually remain in the intestines. Therefore, after the first two or three days, the midwife should see that the bowels are open daily, or at least every other day, by means of an injection or mild aperient. The patient should use a bed-pan for this purpose for the first nine days: she should not get up, nor strain violently. If these means do not suffice for opening the bowels, a medical man should be called in.

§ 137.

The lying-in woman should remain quiet in bed till the end of the second week if possible, even if she feels well and strong. If the bed has to be made during this period, she must not get up, but must be lifted out of bed and in again. Likewise the hair must be combed and dressed whilst she is lying down. From the end of the first week the patient should be advised to lie on her side, as lying on her back favours the occurrence of a displacement of the womb backwards. (*See* § 374.)

Rest of mind is not less necessary to the patient than rest of body. Wherefore visits of people not concerned in the nursing should not be allowed in the first week. Mental disturbances generally, joyful as well as sorrowful, should be guarded against as much as possible.

Sound sleep is more significant in regard to the bodily, than to the mental well-being of the patient. When this is wanting, in spite of external quiet, medical assistance is indispensable.

Even after the lying-in woman has left her bed, she should be very gentle in her movements, and lie down the greater part of the day. She should not do anything requiring severe exertion for the next three or four weeks, as the internal organs are not yet thoroughly restored to their former condition; and such exertions may easily cause a flooding, or falling of the womb or vagina. In winter, whilst the weather is cold, she should not leave the room for five or six weeks, if it can be avoided.

§ 138.

If the temperature of the body be tested with the thermometer, it will be found that, even if the patient is well, it will be higher than ordinary during the first five or six days. Most sicknesses of lying-in women are associated with a greater elevation of temperature

—fever. Wherefore “taking the temperature,” as it is called, is one of the surest means of testing whether a lying-in woman is ill or well; and if the midwife possesses a thermometer, she ought to take it regularly during the first few days. It is indispensable to do this after a chill or shake, and, generally speaking, when the patient is not well. If the temperature is found to be unnaturally high (101° or more) in the axilla (armpit), she should insist on a medical man being called in, even although she may be unable to find any other sign of illness. In measuring the temperature in the armpit, the sweat should be wiped away first, and the part dried. It is well to close the arm again for a little while before putting the instrument in. After warming the thermometer in her hand, she places it deep in the armpit, and holds it in whilst she presses the arm (which is bent at the elbow) against the side. She must take care that the bulb of the instrument is completely surrounded by the walls of the axilla, and from time to time she should see that it is not displaced. If the patient is restless, she must hold it in its place herself. The mercury rises more quickly at the beginning than towards the end of the measuring, and the higher the fever is the more quickly it rises. It does not reach its highest point till after ten minutes—generally fifteen minutes, and often not till after twenty or more. The thermometer should not be taken away till a few minutes after the mercury has ceased to rise.

CHAPTER III.

THE NEW-BORN CHILD.

§ 139.

A new-born child sleeps the greater part of the day, if it is well. It is only awakened by hunger, at intervals of four or five hours, and then makes known

its wants by a cry, and as soon as these are satisfied it goes to sleep again. After two or three days, however, the desire for food becomes greater, and is made known oftener; and then the intervals of waking become gradually longer.

§ 140.

Usually the child passes urine directly after it is born, unless, as is sometimes the case when the labour has been long and difficult, it comes into the world with its bladder empty. With a plentiful supply of nourishment, it passes a large quantity of urine, a little at a time, but very often. During the first months, if the child is healthy, the urine is generally almost as clear as water, free from smell, and does not stain the napkins.

The first emptying of the bowel follows later, usually about twelve hours after birth. For the first three days, only the fæces that have been collected before birth (meconium) are expelled. They consist of a tarry mass, at first blackish, and afterwards a brownish green. From the fourth day, the excrement gradually takes on its usual yellow colour. The child generally has its bowels open three or four times in the twenty-four hours.

§ 141.

The part of the navel cord which is attached to the child very soon shrivels, and becomes dry from the tip onwards, in consequence of its contact with the warm body of the child. The drying-up advances as far as the fold of skin at the navel, from which the dried black-looking string falls off usually about the fourth or fifth day. When the cord is thick and gelatinous, it is generally cast off with a livid reddening of the skin of the navel fold, and some discharge of matter; but if it is thin, there is frequently neither of these. After the cord has come off, a funnel-shaped, hollowed-out wound is left, which is generally completely healed up in ten or twelve days.

§ 142.

If the curdy slime that sticks to the child is not washed off completely at the first washing, it dries on the body, and comes off on the second or third day, along with the upper skin, or cuticle, as scurf or scales; otherwise, as a rule, there is no perceptible scaling.

Not unfrequently, the skin of the child acquires a yellow colour after a few days, without its health being in any way disturbed.

During the first few days of its life the child loses a little in weight, as it takes in less than it parts with. With good care and nourishment, however, an increase in weight sets in again about the third or fourth day.

CHAPTER IV.

THE NURSING OF THE NEW-BORN INFANT.

§ 143.

From the first, the new-born child should have a separate bed. A cot is preferable to a cradle. It should only be put into its mother's bed temporarily, as when it is put to the breast, and then only when she is awake. It should never lie there through the night, as then it runs the danger of being lain upon during sleep. It is generally undesirable for the child to remain needlessly long in bed with its mother, at least unless she is very scrupulously clean and careful, as some of her discharges might get into its eyes, and set up inflammation. A bottle of warm water is required at the foot of the child's bed, not too hot, well corked and wrapped up in something. This will provide a constant supply of warm water for washing the child, and will keep its place warm whilst it is with its mother. *The child must always be laid upon its side*, and then, if it throws up its milk, it will run out of the mouth side-

ways, and not run back and choke it. When the child's head is protected by a covering, as is frequently done, care must be taken that the face remains free, so that the air has free access to its mouth and nostrils.

§ 144.

Cleanliness is a chief requisite for the well-being of the child. For this reason it should be examined as often as it awakes, to see if it has soiled itself at all, and if it has, it should be washed, and have a clean, dry napkin put on. Besides this, the midwife should give it a warm bath every day. After each bath she wraps the stump of the cord up in a fresh piece of rag, but she must take care not to drag it, as it may easily come off. When it falls off, she lays a piece of rag over the navel, either dry or greased with fresh oil or fat. This she continues to do until it is completely healed.

The midwife must take special care to prevent any of the lochial discharge from coming into contact with the child's eyes. (*See* § 143.) After attending to the mother, she ought always to wash her hands with soap and water before touching the child, and she should also see that the mother does the like before putting the child to the breast.

When the child has sucked, its mouth should always be cleansed with a cloth dipped in water or weak wine and water.

§ 145.

The milk of a healthy mother is the most suitable nourishment for the child. At first it is put to the breast as often as it is hungry, *but it should be accustomed early to a fixed time for drinking.* If the mother has a sufficient supply of milk, and the child has satisfied itself, *it should not be put to again for two hours at least.* The restlessness and crying of a child are not by any means always a sign of its being hungry. Its digestion may be disordered by being fed too often, and in that case its unrest would be increased by feeding.

The giving of a child something to suck to quiet it is injurious, and ought not to be tolerated. If the mother has been very much excited, the child should not be put to the breast immediately afterwards, as the milk would be injurious. The milk that has collected in the breast should be drawn off by breast-exhausters before the child is put to.

It is known that a child has enough food when it is quiet, when it does not cry for the breast too often, when it thrives well, when it often wets itself, and has its bowels open several times a day; occasionally it even "possits" when it has had too much. A child that does not get enough food is restless, shrunk, soils itself rarely, and wets itself but seldom. If a child is weakly, the midwife should pay particular attention to these signs. Such children, especially if they are premature, often have so great a tendency to sleep that hunger will not awaken them. They can well-nigh starve without showing any unrest, and they go off suddenly in convulsions. For these reasons weakly children should be waked up every three or four hours and put to the breast. If they are too weak to suck, they should be fed with a spoon, either with their mothers' milk drawn with a breast-pump, or diluted cows' milk. This should be continued till they are stronger.

A mother that suckles her child will generally soon find out if she has not enough milk for it, and will then make her fears known. A wet-nurse, on the contrary, is often inclined not to acknowledge any scarcity, and will even attempt to deceive by wetting the child's napkin with water. For these reasons a careful watch should be kept. If any one will sit beside the nurse when she is giving the child the breast, it will be easy to hear whether the child really swallows milk for a sufficient length of time, or whether, after a few draws, it tires itself out at the empty nipple, and goes off to sleep, only to be shortly awakened again by hunger. If the child is kept away from the breast for several

hours, and the nurse's breasts, notwithstanding, remain soft, it is a sure sign that she does not give enough milk.

§ 146.

If a mother cannot, or will not, suckle her child, the choice has to be made between a wet-nurse and artificial feeding. The decision on this point should be left to a medical man, who will be able to estimate rightly the relative advantages of the two methods: it is not one of the duties of the midwife to decide on this point. In like manner she should not undertake of herself the choice of a wet-nurse, but endeavour to have a medical man to undertake this important business.

§ 147.

To bring up a child without its mother's milk, or that of a wet-nurse, requires the greatest care, and even with it does not always succeed. Generally, diluted cows' milk is the most suitable artificial food for the first year. The milk is the best from cows in the open pasture, when it can be procured often enough—that is, when it can be got fresh three times a day. It is only at first, when the cow first comes out of the stall into the pasture, that the milk—the so-called grass milk—is injurious. In large towns people generally have to put up with milk from stall-fed cows. Cows that are to be chosen should be such as are fed on hay, whilst such as are fed on cabbages and turnips should be avoided. If one has the choice, the milk should be from one, and that a new-milched cow. The milk should be diluted with hot water, or thin arrowroot and water (a teaspoonful of arrowroot to four cups of water). (*See* § 401.) The milk should only be boiled when it cannot be procured fresh often enough, or when it seems not to agree. For the first month it should be used in the proportion of two parts water to one of milk; but later on, as more food is required, the quantity of water is diminished.

[Upon the whole the milk met with in towns may be considered to be rather poor. Such milk will be sufficiently diluted for the child's use if it is mixed with an equal quantity of water. It will now, however, contain too small a quantity both of cream and sugar, and to make up this deficiency, sugar should be added as directed, and the cream from an extra quart of milk per day.] The best sugar for sweetening is sugar of milk, of which as much as will lie on the point of a knife is added to a cup of milk. The food thus prepared should be given out of a feeding-bottle with an ivory, calf's, or black (unvulcanized) india-rubber nipple. [The old-fashioned bottle is by far the best. So long as the child has to be taken up and held in the arms to be fed, it is not likely to be *overfed*; whilst those that suck a flexible tube as they are lying down almost invariably are.] The food should not be so hot that the bottle containing it cannot be borne against the eye. It is well to wrap the bottle in a piece of flannel or woollen cloth, to prevent its cooling too rapidly. The food should be freshly prepared every feeding-time, and what is left ought to be emptied out. After being used, the bottle and nipple should always be washed out and left to soak for some time in clean water. When brought up in this manner, as well as when brought up at the breast, the child should be early accustomed to regular feeding. It is also well to give such a child a daily bath of lukewarm water. If the child cannot bear the food, a medical man should be called in; and until his arrival, if other fresh milk cannot be procured, a little condensed milk or even chicken broth may be given.

PART III.

IRREGULAR PREGNANCY, LABOUR, AND
CHILDBED.

SECTION I.

IRREGULAR PREGNANCY.

§ 148.

DURING pregnancy, women are predisposed to many ailments which are connected with its various processes of development ; some are caused or at least favoured by them, or depend on disturbances of them ; others assume a special importance by their connection with them. The midwife must make herself acquainted with these ; she will then, in many cases, be able to prevent something worse, by her timely advice. In other cases, until the arrival of the medical man it will be her duty to render assistance herself.

CHAPTER I.

FAULTY POSITIONS OF THE WOMB AND VAGINA DURING
PREGNANCY.1. *Retroversion of the Womb.*

§ 149.

By retroversion of the womb is meant that faulty position of the organ in which *the base sinks down*

backwards into the hollow of the sacrum, and the vaginal portion is drawn up towards the symphysis pubis. There is generally associated with this a sharp bend, near the internal mouth of the womb, so that the vaginal portion, although dragged up to the symphysis, has a downward direction, and the external mouth of the womb looks in the same direction. Sometimes, however, this flexion, as the sharp bend is called, is absent, and then the vaginal portion stands very high near the upper border of the pubes. As a matter of course, the womb can only lie in this position during the first three or four months of pregnancy, whilst it is still within the pelvis. Sometimes it is forced into this position suddenly by some force from without, as by a fall, a blow on the lower part of the belly, or by pressure of the abdominal walls, as in rising, bending, etc. More frequently, however, there has been a certain degree of backward displacement before pregnancy began, and the base of the womb has been prevented from rising by the projecting promontory of the sacrum.

It is only when the displacement has arisen suddenly in consequence of external violence that it is attended from the commencement by painful feelings of dragging and bearing-down in the belly. Usually the disturbances caused by the displacement make themselves known gradually, becoming more pronounced as the enlarging womb fills up the pelvis more and more, and *presses more and more firmly upon the urethra and bowel.*

The difficulty of emptying the bladder gradually increases, until at last it cannot be done at all; the motions are retained; and to these are added forcing, labour-like pains. Sometimes, however, before these symptoms of *strangulation*, as it is called, set in, flooding comes on, followed by an abortion. If strangulation does set in, however, and the faulty position of the womb is not quickly rectified, the retention of the urine, and the unavoidable inflammation within

the abdomen, speedily bring the patient into a condition of extreme danger.

§ 150.

Most frequently the midwife is first called when the pregnant woman is no longer able to pass her urine. *In every case of retention of urine in the first three or four months of pregnancy, it should be the first thought of the midwife to see if a retroversion of the womb is not the cause of it.* By external examination she may feel the distended bladder above the pubes, reaching as high as, or higher than, the navel. The whole belly is often distended and tender in consequence of the motions and wind being retained within the intestines. On examining internally, she sometimes finds the vaginal portion dragged up so high that she can only just reach the external mouth of the womb at the upper border of the pubes. Usually, however, the finger will come upon the vaginal portion, thickened and softened by pregnancy, just behind the pubes, with the mouth looking downwards; and from this it will be able to follow the ball-like, enlarged body filling up the hollow of the sacrum, and forcing forwards the hinder wall of the vagina. The base of the womb generally lies lower than the external mouth.

Indeed, the condition internally is not unlike that in which a tumour, lying behind the vagina in the hollow of the sacrum, forces the womb forwards and upwards. In the latter condition, however, if the abdominal walls are not too tight, the base of the womb will be felt above the pubes. The distinction between the two, nevertheless, is not of such great importance to the midwife, as urethra and bowel are compressed in the same manner in both, and she has to follow the same method of procedure in both cases.

§ 151.

As soon as the midwife finds out what is the matter,

she should send for a medical man as quickly as possible. In the meantime, before he comes she should make a *careful attempt to draw off the urine with the catheter*. The catheter may be very hard to get in, owing to the pressure on the urethra. (See § 406.) She should then put the patient quietly on her side, and forbid her to bear down. Whether a lavement is to be given should be left to the decision of the medical man.

§ 152.

If the midwife knows, from any source, that a woman is suffering from retroversion, or falling of the womb, she should counsel her, as soon as pregnancy begins, to seek the advice of a medical man, and in any case to keep quiet, to avoid bodily exertion, and particularly long standing. As soon as disagreeable sensations are felt within the pelvis, she should lie down, at least for a time, on the side; and care should be taken that the bladder and bowels are emptied regularly. In this way actual strangulation of the womb is frequently avoided.

2. *Falling of the Womb and Vagina.*

§ 153.

Falling of the womb and vagina is a rather frequent malady, particularly amongst women belonging to the working classes. Either the womb is the first to sink down, carrying the vagina with it, or the vagina is the first to give way—most frequently its anterior wall—and drag the womb after it. The longer the evil lasts, the worse it gets, as a rule. At first the sinking parts remain within the passage; later on, they are partially forced through the genital fissure when the patient stands up, but they mostly return of themselves when she lies on her back. It is only rarely that the disease progresses so far that the vagina, turned inside-out with the womb inside it,

lies quite outside the genital passages. When the parts have been exposed for a long time to the influence of the air, the walls of the vagina gradually lose their transverse folds, the skin becomes whitish, dry, leathery, whilst ulcers form on the mouth of the womb, in consequence of its being rubbed between the thighs and by the clothes, and through constant wetting by urine. Frequently a portion of the bladder is pulled down with the rest, giving rise to considerable difficulties in passing water. The anterior wall of the bowel is more rarely among the parts that fall.

§ 154.

Most cases of falling of the womb arise in the lying-in period. The weight of the womb and the weakening of its supports—the uterine ligaments and the vagina—at this time favour its occurrence, especially when the posterior wall of the vagina has lost its support through an ununited rupture of the perinæum. When a lying-in woman leaves her bed too early, and takes insufficient care of herself, by doing housework, etc., the womb sinks, slightly at first; this, however, gets worse by exertion after subsequent lyings-in, or through attacks of coughing or vomiting, and at last it ends in complete falling of the womb. It is rare for it to come on in childbed, suddenly, from violent pressure of the abdominal walls, or concussion of the body by a fall or jump.

§ 155.

It is not difficult to recognise falling of the womb or vagina. In falling of the vagina the midwife finds that the anterior or posterior wall, or more rarely both, hang down outside the genital fissure in folds, and particularly in the erect posture, or when the woman is made to bear down. If both walls come down, the womb always comes down with them. The midwife will be able to distinguish falling of the womb from tumours that grow out of it, and reach

down to the entrance of the vagina or the vulva, such as polypi, and from inversion (*see* § 349) of the womb, by the following:—In falling of the womb, the mouth of it is at the bottom of the tumour, and will be felt or seen here, whilst the finger will not be able to pass into the pelvis without pushing a fold of the vagina up before it, if the latter descends with the womb.

§ 156.

The treatment of falling of the womb is not within the province of the midwife, but should be left to a medical man. But if it comes on suddenly, in consequence of some violent exertion or shaking, and the womb is forced outside the vulva, and if at the same time medical aid cannot be procured quickly, then the midwife should make a cautious attempt to replace it before it begins to swell. In order to do this, the patient should lie on her back, with her buttocks raised and her knees drawn up. The midwife then oils her right hand, and if necessary the fallen womb; she grasps it gently but firmly with the tips of her fingers, and pushes it up in the direction of the middle line of the pelvis. After it has been returned, the patient must continue on her back until the arrival of the medical man, and all bearing or pressing down must be strictly forbidden.

§ 157.

If a woman who suffers from falling of the womb becomes pregnant, unless the descent is considerable, the womb usually rises out of the pelvis after the third month,—that is, if the patient keeps moderately quiet,—in consequence of its attaining such a size that there is no longer room for it within the pelvis. Occasionally, however, the womb remains in the pelvic cavity longer than it should,—that is, until it gets too large for it,—when it becomes difficult to empty the bowels and bladder, and the patient suffers from pain and bearing-down. If she keep upon her back, however,

these difficulties usually disappear quickly. On these accounts the midwife should admonish any pregnant woman who suffers from falling of the womb to refrain from all heavy work, from standing or walking too long at a time, and to take to her bed upon the first appearance of any of these disorders, and not to leave it until they have completely disappeared. Should the womb remain down notwithstanding all these measures, or should it even come outside through the genital fissure, wholly or in part, a medical man should be called as quickly as possible.

§ 158.

Falling of the vaginal walls usually becomes more pronounced during pregnancy, as they are then fuller of blood and increased in bulk. If great annoyance is caused even when the patient keeps perfectly quiet, medical assistance should be procured.

3. *Obliquities of the Womb.*

These will be considered among the Irregularities of Labour.

CHAPTER II.

HÆMORRHAGE FROM THE WOMB DURING PREGNANCY.

1. *Hæmorrhage during the first twenty-eight weeks of Pregnancy; and Abortion.*

§ 159.

Hæmorrhage from the uterine cavity at this period is caused by the rupture of some of the vessels that unite the ovum to the inner surface of the womb. If this *separation of the ovum* takes place at its lower end, near the internal mouth of the womb, the blood that is poured out escapes externally (external hæmorrhage); if the point of separation is higher up, the blood

may first collect upon, or between, the layers of the decidua, or between that and the chorion, and become clotted (internal hæmorrhage), only escaping when the separation between the decidua and womb has advanced as far as the internal mouth of the latter.

These hæmorrhages most frequently come on from the second to the fourth month of pregnancy. There is always danger of a miscarriage accompanying them, for either the separation of the ovum is the result of a uterine contraction, or, more frequently, contractions are set up by the separation. Notwithstanding great and repeated losses of blood, however, pregnancy may go on to its full term.

In some women, the monthly flow returns once, or more times, during pregnancy, but the quantity is generally less than usual. This flow is distinguished from the one mentioned above by its occurrence at the regular time, and by the greater admixture of mucus. But even here, when the surroundings are unfavourable, a partial separation of the ovum is to be feared, which may lead to a miscarriage.

In very rare cases, the cause of the hæmorrhage is disease of the neck of the womb, such as cancer or polypus.

Hæmorrhage from the rupture of a varicose vein in the vagina is equally rare during pregnancy. We shall speak of this later on, among the Irregularities of Labour.

§ 160.

Rupture of the vessels that connect the ovum with the womb is usually caused either by an increased rush of blood in these parts, or by a premature contraction of the womb, or by a violent concussion of the body. For these reasons we observe hæmorrhages most frequently in unhealthy conditions of the womb, especially in faulty positions of the organ, which may lead to its strangulation within the pelvis, in insidious inflammations, etc., or in *diseases of the ovum*, in consequence of

which it dies, or in febrile diseases affecting the patient herself. Amongst the external causes of hæmorrhage may be mentioned too frequent or too impetuous coition, long standing, straining of the abdominal walls in rising, stooping, etc., concussion of the body by a fall, a knock, or travelling over a jolty road, etc. Moreover, violent mental shocks, especially fear, may cause contractions and hæmorrhage. Anything that can be harmful is more particularly so at the time the monthly flow would have been on had there been no pregnancy.

§ 161.

Disagreeable sensations in the back, and a feeling of weight and pressure in the pelvis, often precede the onset of hæmorrhage. The discharge is of various kinds. Sometimes the loss of blood is slight, but of long continuance; in other cases it comes in gushes. Distinct pains do not come on in the earlier months of pregnancy until after the hæmorrhage has existed for some time; they are usually felt as a dull dragging in the sacrum and lower belly, and scarcely ever as acute pains. If it goes on to a miscarriage, the ovum is sometimes expelled in a few hours, whilst sometimes it takes days or even weeks.

From the second to the third month, the whole ovum, enveloped in the decidua, is frequently expelled entire. In this case the child has generally been dead some time, and for the most part dissolved in the waters.

From the third to the fourth month, the ovum usually bursts in its passage through the incompletely dilated mouth of the womb, and the little fœtus passes away with the waters, unnoticed: the womb then contracts; the lower part of the ovum, which has already passed through the os uteri, becomes separated from the upper portion, and falls off; whilst the part that remains behind within the uterine cavity is only cast off after repeated discharges of blood, and very frequently putrid and piecemeal.

From the fourth to the seventh month, the pains are more distinct, painful, and bearing down, and they are usually present before the onset of the hæmorrhage. This is but rarely serious, and often absent altogether. The point of the ovum generally gives way in the os uteri; the waters then flow off, and the fœtus is born. The expulsion of the after-birth is generally delayed; it can be retained for weeks, and even months, giving rise to hæmorrhages or foul discharges.

When, after the destruction of the fœtus in the first month of pregnancy, or after its expulsion in the later months, the membranes are expelled, after a longer or shorter period of retention within the uterine cavity, this expulsion is generally attended by smart bleeding; and the membranes are so much changed by the blood that has been poured out between them and become clotted, they are not recognisable. Such shapeless, fleshy masses are called blood-, or flesh-moles.

After the ovum has entirely come away, the hæmorrhage generally ceases at once, and a mucous discharge similar to the ordinary lochial discharge remains a few days longer.

§ 162.

If the midwife is called to a woman suffering from hæmorrhage during her pregnancy, she should insist on a medical man being called in, as, although he may not be able to prevent a miscarriage, he ought to be present to ward off the dangers associated with such a mishap. Until the arrival of the medical man, the midwife should proceed as follows.

The first care should be to keep the patient quiet, both bodily and mentally, even although she may think that the discharge is only a return of the menses. She must therefore go to bed immediately, and lie flat down, with the thighs drawn together; she should move as little as possible, as any movement may loosen the clot of blood by which the openings of the blood-vessels may be closed. For the relief of her necessities a bed-pan should be

used, and in using it she should be lifted up carefully. She should speak little, and leave her household cares to others.

Along with absolute rest, coolness is required. For this reason feather beds are unsuitable. The best bed is a firm mattress. The covering should be light. The room should be kept only moderately warm, and care should be taken to get a supply of fresh air. Everything the patient takes should be cool, in bad cases quite cold. Heating food—spices, coffee, tea, beer, wine, and especially brandy—should be strictly forbidden.

§ 163.

After the midwife has attended to these arrangements—which, indeed, are suitable for all cases—she proceeds to a closer examination.

First of all, she inquires after the quantity and character of the blood that has been discharged. The more copious the flow has been, and the more numerous and larger the clots, the greater in general is the danger of a miscarriage.

The discharged blood-clots should be kept, so that the medical man can see whether they contain the ovum, or parts of it.

By external examination, the midwife will ascertain whether the base of the womb can be felt above the pubes, or not; and if it can, whether she can perceive any occasional hardening of it. The occurrence of distinct pains would in any case be a bad sign as regards the continuance of the pregnancy.

If the flow of blood has stopped, it is better to defer the examination for the time, lest the irritation of the examination should start the bleeding afresh. When much blood has already been lost, however, so that it is likely that the ovum is already separated, or even in the vagina, or when there are other signs, such as pains and bearing-down, or stoppage of urine, then the examination should not be delayed. It should, however, be conducted carefully and as gently as possi-

ble. The midwife will pay attention to the condition and position of the womb, and particularly to the state of the vaginal portion. Should she find this much swollen or hard, or even a tumour arising from it, any of these conditions may be the cause of the bleeding; and the speedy arrival of a medical man becomes doubly necessary. If the vaginal portion is natural, however, and promises the continuance of the pregnancy, then special attention must be given to the changes in the mouth of the womb. The more the external os lies open, and the cervical canal allows the finger to pass, the less likely is it that the processes which have already commenced, and which have for their object the casting-off of the ovum, will be restrained. When the tip of the ovum can be already felt in the cervical canal, or in the external os, the thoughts of avoiding a miscarriage must be given up. Frequently, however, it is not the ovum itself that is felt in the cervical canal, but clotted blood that sticks to the lower part of it. This should not by any means be removed, as it contributes materially to the arrest of the bleeding.

§ 164.

So long as the loss of blood is moderate the midwife should limit her activity to seeing that the patient is kept quiet and cool. She should avoid unnecessary repetitions of the internal examination. When there are pains, however, and when the womb can be felt above the pubes, she should take note from time to time as to whether the womb has diminished in bulk (when the ovum has been expelled), or whether, on the contrary, it is increasing in size. The latter will be a sign that blood is collecting within the uterine cavity. This, however, occurs only in exceptional cases, and then only when hæmorrhage has lasted a considerable time, at least to such an extent as to cause a noticeable increase in the size of the womb. Should this be the case, the arrival of a medical man should be hastened as much as possible.

§ 165.

If the loss of blood is greater, so that if it continued long, the life of the patient would be in danger, or if accompanying it great pallor of the countenance and faintness come on, the midwife herself must then, in the absence of a medical man, take decisive measures to check the hæmorrhage. To attain this end there are three means at her command: the *local application of heat, of cold*, and *plugging the vagina*. All three means generally set up uterine contractions, or increase pains already present, and thus assist the expulsion of the ovum. The midwife will be the more inclined to adopt these methods as upon examination she finds the labour already progressing, the mouth of the womb open, and the tip of the ovum advancing. In the meantime, however, the extent of the hæmorrhage is quite sufficient to warrant the adoption of the above-mentioned means. In some cases the hæmorrhage can be stopped by these means, without the pregnancy being interrupted. When the loss of blood is great, however, it is useless to expect to stop it until the ovum comes away, and therefore it is very desirable it should come quickly.

§ 166.

[Both *heat* and *cold* applied suddenly contract blood-vessels and check bleeding. The best way of applying heat is to direct, for a few minutes, a stream of hot water (110 to 115° Fahrenheit) on to the neck and mouth of the womb by means of a Higginson's syringe. The application of heat will probably be more effective in checking hæmorrhage than cold, and should be tried first.]

The midwife makes use of cold for the purpose of checking the bleeding, by applying cloths dipped in the coldest water, and then wrung out again, to the lower part of the belly, and to the external genital organs, and by even giving a cold water lavement, or

enema. Whilst these are being done, she must take care that the patient is moved as little as possible.

More effectual still is *plugging the vagina*, and this is the next step the midwife must take if the cold applications have not answered their purpose. In doing this, plugs of clean wadding are made use of, the size of a hen or duck egg, tied with a piece of string, one end of which is left long. These plugs are soaked in carbolized oil, and pressed into the vagina one after another. The first is pressed *against the mouth of the womb*, and others follow, until the upper two-thirds of the vagina are packed full. These plugs keep very firm, and may lie in the vagina from twelve to twenty-four hours, without irritating the parts, and without setting up decomposition in the blood and mucus; and they can be easily drawn out by the string that is attached.

§ 167.

If the plugging of the vagina sets up stronger pains or causes bearing-down or pain in the pelvis, the plugs should be removed after a longer or shorter time; and if they have become offensive to the smell, the vagina should be washed out and cleansed. If the ovum should be found lying loose in the vagina, it should be removed before decomposition sets in. The ovum that has thus come, or been taken away, should now be kept safely in cold water, so that the medical man may examine it, and satisfy himself as to whether the whole of it has come away, or whether a part still remains within the womb. Should the ovum still remain partly within the neck of the womb, no effort should be made to take it away, as it is easily torn; and if it were, it would be more difficult to expel the rest. If the bleeding should stop, and the ovum still remain within the womb, the midwife can await the further course of events. If the bleeding continues, however, or returns, she must then plug the vagina afresh.

§ 168.

If the bleeding should continue after the ovum has apparently come away, it is to be feared that some portion of it has been retained within the uterine cavity. If after the discharge of the waters the child has come away by itself (as is usually the case after the fourth month), the membranes, as we have said before, are generally some time before they are cast off. In all these cases it is the duty of the midwife to call in the aid of a medical man, as it may be necessary to extract the remains of the ovum artificially; for the retention of any part of the ovum is not only liable to cause renewed and sometimes serious hæmorrhage, but its decomposition is not unlikely to give rise to dangerous inflammatory diseases. *The task before the midwife is this: to stop the bleeding, and to excite such uterine contractions as shall expel the membranes and placental remains.* Both these ends are attained by injections of hot or cold water directed to the neck of the womb. The vagina should be plugged during the first three months of pregnancy only, when the small size and insignificant degree of dilatibility of the womb allow little room to fear the collection of any large quantity of blood within its cavity. In plugging during this period, however, the womb should be examined externally repeatedly, in order that any increase in size may not escape notice. Should there be any, the plugs should be taken out and the vagina syringed with hot or cold water immediately. If the discharges from the womb become offensive, the vagina should be syringed out twice or three times a day, or oftener if needful.

§ 169.

If, from the profuseness or long continuance of the hæmorrhage, the patient becomes exhausted, the midwife must not omit to keep her up by suitable nourishment. Exhaustion will make itself known by the increasing pallor and coldness of the skin, by moans

or sighs, noises in the ears, dimness of sight, oppression of the chest, anxiety, nausea, until at last consciousness is lost and the patient faints away. Such a state of things is *always dangerous to life*, even if the hæmorrhage has been overcome, and the attendance of a medical man is therefore urgently needed. A kind of convulsive stiffening of the whole body, lasting a second or two, and repeated once or twice, frequently comes on just as the patient is in the act of dying. Until the medical man comes, the patient must be made to lie perfectly flat, or the head should be even a little lower than the rest of the body; fresh air should play about her; and at short intervals small quantities of meat-broth, wine, or Hoffman's Drops upon sugar should be given, eau de Cologne, or vinegar, sprinkled on her, and spirits of ammonia (hartshorn) applied to the nostrils.

§ 170.

After a miscarriage, the patient should do exactly as if she had been confined at full term, and should be particularly careful not to sit up too soon.

In order to avoid a recurrence of the accident during the next pregnancy, it is often necessary for the patient to be under the care of a medical man in the interval. In any case it is well for her to obtain advice as to how she shall act in case she again becomes pregnant.

2. *Uterine Hæmorrhages during the last three months of Pregnancy, and Premature Labour.*

§ 171.

In the last three months of pregnancy, also, hæmorrhages may be caused by diseases of the neck of the womb, such as cancer, polypi, etc.

Or they may be caused by the bursting of a knot of varicose veins in the vagina, or on the external genital organs (*see §§ 252 and 253*).

§ 172.

Most frequently, however, hæmorrhages at this period are occasioned by a premature separation of the placenta, and this, in its turn, is *caused by the placenta growing over or too near to the internal mouth of the womb*, so that the lower edge of the one either completely or in part covers the other, or at least reaches very close to it. *Placenta prævia*, as this condition is called, almost always occurs in women who have previously borne children. When, then, from the commencement of the eighth month of pregnancy onwards, the uterine cavity goes on dilating, and the lower segment of it takes part in the process, the placenta, which is situated here, cannot follow suit, and thus the vessels that run between the womb and placenta become stretched, and finally torn.

For these reasons, hæmorrhages occur as early as the eighth month, but more frequently in the ninth and tenth,—and this without any particular external cause, and without any pains,—sometimes to a slight or moderate extent, sometimes profusely, even from the commencement. The bleeding generally ceases as soon as the patient is perfectly at rest, and the open mouths of the torn vessels become stopped up by a drop of clotted blood. It comes on again, however, without any external cause, as the dilatation advances, at longer or shorter intervals, until labour comes on, and usually with increasing severity, as with every fresh bleeding the old protecting clots of blood are washed out of the vessels. Indeed, in bad cases the patient may bleed to exhaustion without any signs of labour showing themselves.

As a rule, however, an extensive separation of the placenta, attended by copious hæmorrhage, leads to a premature birth. Those cases are the most favourable in which the separation is produced by uterine contractions, and in which, therefore, no blood is lost beforehand. Although the pains are usually weak, the separation of the placenta is naturally increased by

them, and at first the flow of blood is more copious. One of the greatest dangers lies here : the feeble pains keep up the hæmorrhage without at the same time effectually forwarding the labour. If it happens that stronger pains have been excited, and the position of the child is favourable, and other things are right, the labour may run an otherwise natural course, and favourable to both mother and child. For the neck of the womb, in cases of Placenta Prævia, is generally softer and more yielding than usual, and for this reason offers no great resistance to the entrance of the foetal head or breech. The presenting part of the child pushes the inferior flap of placenta, that has been separated, before it as it advances, and along with it the membranes. It presses it sideways against the uterine walls and the walls of the pelvis, and thus checks the hæmorrhage by pressure. After the rupture of the membranes, so long as the pains keep up, there is but little further difficulty in the expulsion of the child, as the external parts have generally been sufficiently prepared by previous labours.

Sometimes, when the pains have been strong and the flooding great, the placenta is *completely separated* and expelled before the child, whereupon the hæmorrhage abates, or stops altogether. Such cases are very rare, however; but when they do occur, the child is generally lost, even when the labour is quickly over.

§ 173.

In cases of Placenta Prævia, *the life of the mother is in danger through great or long-continued loss of blood.* As a rule, the child loses no blood, as its vessels are not generally injured in the separation that takes place. It is exposed, however, to the danger of suffocation, as by the separation its connection with the circulation of the mother is cut off.

§ 174.

The midwife may suspect that the placenta is

growing over, or near to, the internal mouth of the womb by the way the hæmorrhage comes on at this period. She can only make sure, however, by an internal examination. When examining externally, she particularly notes the position of the child, and the presence or absence of uterine contractions. If the hæmorrhage has stopped before the internal examination can be made, it is even more important to refrain from it now than in hæmorrhages during the earlier months of pregnancy, lest the clots of blood that block up the vessels become loosened, and the bleeding come on afresh. If the loss of blood continues, however, the midwife should proceed at once to examine internally, but with the greatest caution and carefulness. If her suspicion has been correct, she will find nothing wrong in the vaginal portion of the womb beyond a softening and loosening of its tissues. If the cervical canal is sufficiently open to allow the finger to pass, she will easily recognise the spongy feel of the placenta, as it lies wholly or in part over the internal mouth of the womb. Sometimes she will only be able to reach the lower margin of one side of the placenta, or perhaps not so far as this, and she may be only able to conclude that the placenta is near by the thickened and roughened feel of the membranes.

If the external mouth of the womb is closed, or only the lower part of the cervical canal open, a full certainty is not possible. When this is the case, and the midwife has ascertained by external examination that the head presents, it will probably be a case of Placenta Prævia, when in examining through the vagina she cannot feel the whole head, or at least a part of it, as distinctly as usual, but, as it were, through a thick cushion.

§ 175.

In every case of hæmorrhage of this kind the midwife should at once demand the assistance of a medical man,

and the greatest responsibility will rest on her if she does not insist sufficiently early on his being called ; for in these cases the *danger is exceedingly great*, the assistance to be rendered is difficult, and beyond the powers of the midwife to render properly. As the medical man cannot always be upon the spot immediately, however, the midwife must do what she can until he comes ; she proceeds then as follows.

§ 176.

Before labour actually commences, keeping the patient quiet and cool in the manner before mentioned. (*see* § 162) will generally be sufficient to stop the hæmorrhage. The most important things of all are absolute rest and quiet, even if the bleeding has already stopped. The patient should not leave her bed until after the birth of the child without the express permission of the medical attendant, for the slightest movement or straining may set up renewed and serious bleeding, even after it has stopped several days.

§ 177.

If the blood flows freely, the midwife must specially notice whether the discharge is accompanied by pains, that is, whether labour is commencing, as then the presence of a medical man is more urgently needed. Uterine contractions in such cases may easily be overlooked, as they are generally feeble ; the patient feels them but slightly, or not at all ; and except for the flow of blood, their effects on the neck and mouth are not recognisable at the commencement. The midwife will only make sure that there are contractions after frequent and long-continued examinations of the lower part of the belly.

§ 178.

So long as there are no uterine contractions, the midwife must direct her treatment against the violence or long continuance of the flow of blood. If perfect

quietness is not enough to arrest the bleeding, or if it returns in spite of it, and continues moderate in quantity, the midwife should at first try the application of heat or cold to the parts in the manner above mentioned (§ 166). But if the bleeding is more violent, she must make use of the most efficient means without delay—that is, *plugging the vagina*. In this case the plugging must be done with extreme care, as firm pressure against the neck of the womb is required to arrest the bleeding. A larger quantity of plugs is required than in the earlier months of pregnancy, as the vagina is more roomy. To prevent the plugs being forced out, the thighs should be brought together. The midwife will generally succeed in stopping the bleeding by these means. Should the bleeding be renewed after a time, she must put in more plugs. If possible, she should allow the plugs to remain in until the arrival of the medical man; but if medical assistance cannot be procured for a long time, and the bleeding has ceased for several hours, and the plugs are causing sharp bearings-down and pains in the pelvis, then the midwife may cautiously remove them for a time. If the bleeding should return, however, as soon as the plugs are removed, they should of course be replaced at once by fresh ones.

§ 179.

If labour has commenced, although the pains may be but weak, *there should be no delay in plugging the vagina*, even if the bleeding should be unimportant at the time; for any pain might separate the placenta so far that, without such a protection, a furious hæmorrhage might come on that would threaten the life of the patient. Besides keeping the bleeding in check, the pains should be encouraged, so that the labour may be got over more speedily. If the midwife has plugged the vagina carefully, the bleeding will generally stop for a time, or at least abate to such a degree that she will be able to await the arrival of the medical man.

without anxiety. If this is delayed many hours, and the plugging gives rise to pain, it must be removed, and, after the vagina has been washed out carefully with hot or cold water, replaced by fresh.

§ 180.

As the pains increase, and labour progresses, the bleeding often begins anew, notwithstanding the plugging of the vagina, rendering the packing-in of more plugs necessary. The midwife informs herself of the progress of the labour by carefully examining internally, after having first emptied the vagina. It is a bad sign if, now that the mouth of the womb is open wider, she can feel nothing but the placenta. If this is the case, nothing remains for her but to plug the vagina again, and tighter than before, in hopes of keeping the bleeding within bounds. If, on the other hand, she can feel the membranes at the edge of the placenta, and behind the membranes the head or breech of the child, she may hope that the case will end favourably. It is now of the greatest importance to strengthen the pains, as the bleeding is stopped with the greatest certainty by the pressure of the presenting part of the child (*see* § 172). For this reason the midwife should persevere with the plugging of the vagina, until the child, forced down into the neck of the womb, stops the bleeding by its own pressure. If the pains are strong, the plugging is often expelled through the vulva, at the same moment as the membranes are ruptured.

§ 181.

The midwife should not rupture the membranes in order to favour the descent of the head or breech; for in case the hoped-for result does not follow, the situation is rendered more unfavourable, both for mother and child, than if the waters had not escaped. If the membranes have been ruptured, the vagina should not be plugged again, as it is no longer in a

condition to stop the bleeding, and, should it continue, plugging would only lead to the accumulation of a large quantity of blood within the half-emptied womb. If, on the other hand, the *membranes have given way of themselves, bearing-down pains are generally present*, by which the hæmorrhage is checked. If the pains are not strong enough, and it is desirable to hasten the advance of the child, the womb can be excited to stronger contraction by firm rubbing of its base. This may be done if the head or breech is presenting. Where one or both feet present, however, it or they should be drawn down through the vagina, until the buttocks enter the mouth of the womb. When they have got thus far the bleeding generally stops, and the further expulsion of the child may be left to nature.

§ 182.

If the case is a cross-birth, *the membranes should, of course, be preserved unruptured until the arrival of the medical man*, if possible, as it will be much easier for him to perform the necessary operation of turning before the waters have escaped. A cross-birth is all the more difficult for the midwife, seeing that she cannot depend on the pressure of the presenting shoulder to check the hæmorrhage. Early medical aid is doubly necessary in such a case as this. For this reason she should make a careful external examination very early, to ascertain the position of the child, that there may be no delay in calling in assistance. The midwife ought to know that even when the head presents the pains may be weak and the head may fail to descend, and in this case the hæmorrhage is, of course, likely to continue. *Turning* is then the safest mode of delivery both for mother and child. Turning can be performed earlier here than usual, as the soft condition of the neck of the womb allows the easy passage of the hand into the womb, even although the mouth may be but little dilated. Bearing this in mind, it will be clear to the midwife how blameworthy she will

be if she does not do everything that can be done to procure the timely aid of a medical man.

§ 183.

After the birth of the child, the midwife must watch over the uterine contractions with special care (see § 120), as the lower part of the womb, to which the placenta was attached, does not contract as firmly as the rest. For this reason, and for fear of flooding, she should give a hot water vaginal injection as soon as she has removed the after-birth, and she should further take care that her patient is kept perfectly at rest.

§ 184.

If the patient becomes excessively weak from loss of blood, and no medical man is present, the midwife should make use of the means mentioned above (§ 169) to revive her.

§ 185.

Even when the placenta is attached to the proper part of the womb, bleedings may arise in the later period of pregnancy from *premature separation of the placenta*, and this separation of the placenta may arise from causes similar to those operating in the earlier period of pregnancy. These cases are rare, however. Such hæmorrhages occur more frequently during labour; they will therefore be considered more fully when we speak of Irregular Labour.

§ 186.

As a rule, however, premature labour, with regular situation of the placenta, runs much the same course as labour at full term, except that the period of dilatation is generally longer, for the reason that the neck of the womb has not undergone the usual preparation. In a premature labour of this kind, therefore, the midwife must act much in the same manner as with a labour at full term. If the after-birth is long in

coming—and it not unfrequently is so—she must follow the rules that will be laid down further on. The bringing-up of a premature child requires great care; in particular, it requires a deal of external warmth to preserve it.

CHAPTER III.

UTERINE DISCHARGES DURING PREGNANCY.

§ 187.

Watery, or watery discharges mixed with blood, coming from the womb during pregnancy, are more rare than discharges of blood alone.

In some women, even in the first months of pregnancy, a watery fluid, or one tinged with blood, escapes from the genital organs and stiffens the linen. In more advanced pregnancy, the discharge comes on in gushes, and in greater quantity, either after a feeling of pressure and distension within the womb, which disappears after the discharge has escaped, or, it may be, followed by slight labour-like pains. This fluid, which is different in character from the vaginal mucus, as well as from urine, is a secretion from the diseased decidual membrane, which accumulates up to a certain quantity between the layers of the decidua, and is then expelled in the manner stated. If the secretion is very copious, the woman, of course, grows weaker: frequently she miscarries. For a pregnant woman suffering from such discharges, the midwife should enjoin great carefulness, and the avoidance of everything injurious that might cause a separation of the ovum (*see* § 160). For the rest, she should refer her to a medical man.

§ 188.

In other cases, frequent and mostly copious bloody

watery discharges set in from the third to the fourth month, with which are associated discharges of pure blood. These discharges generally depend on some degeneration of the ovum, in which after the death of the child the tufts of the chorion are transformed into little bladders varying in size from a millet-seed to a bean, and filled with a shiny liquid. The little bladders are joined to one another by a thin stem, and they look not unlike bunches of grapes or strings of beads. Such a degenerated ovum is called a hydatid mole, because it is formed of little bladders, or cysts, resembling those formed in various parts of the body by hydatids, a species of minute animal infesting the bodies of other animals. It is a shapeless soft mass, of the size of a child's head, or larger, consisting either altogether of these little bladders, or of a firmer, more solid mass, mixed up with clots of blood, and frequently surrounded wholly or in part by layers of clotted and discoloured blood. Usually no trace of the child is to be found, or at most nothing but some shrivelled remains. This degeneration can only be ascertained with certainty when some of the little bladders come away, or can be felt within the mouth of the womb. The condition should be suspected, however, when, along with the discharges mentioned, there is an unusually rapid enlargement of the womb, this enlargement being partly the recent rapid growth of the cysts, and partly of internal bleeding, and when in the latter half of pregnancy, notwithstanding the uterine enlargement, no part of the child can be felt, nor any movements, nor heart-beat. Pains generally come on before the regular end of pregnancy, and the grape-like mass is expelled, accompanied by copious hæmorrhage, either at one time or piecemeal.

On account of the great danger the patient is in from the rapidity or duration of the bloody discharges, the midwife must see at once to a medical man being called in, and in the meantime observe the rules laid down in the preceding chapter on **Premature Labour**.

CHAPTER IV.

SWELLING OF THE LOWER EXTREMITIES, AND ENLARGEMENT AND KNOTTING OF THE VEINS ON THE LEGS AND EXTERNAL GENITAL ORGANS DURING PREGNANCY.

§ 189.

In the later months of pregnancy, swellings of the legs and feet frequently come on; the skin covering the swollen parts is stretched, glistening, and white; on pressing with the tip of the finger, a depression or pit is left, which fills up gradually and somewhat slowly when the finger is removed. More rarely, the swelling spreads up the thighs, and affects even the external genital organs, especially the labia. In lying down, when of course the blood can drain off to the heart more readily, the swelling diminishes, and it is for this reason that the swelling is better on getting up in the morning. The midwife should advise the pregnant woman to lie down from time to time during the day, to avoid exertion, and particularly long standing, and to keep the bowels regularly open. If the swelling is great, the legs should be bound with a flannel bandage from the feet upwards.

§ 190.

It is very much worse when the swelling extends over the upper part of the body, where it is specially to be seen *in the hands and face*. The swelling of these parts diminishes in the upright position, and therefore—just the opposite of the swelling in the legs—is most striking on getting up in the morning. In this case the midwife must see that medical aid is procured at once, as the cause of this swelling is most likely a disease of the kidneys, in which the quantity of urine is diminished, and which may easily be followed by serious attacks, particularly general convulsions. (*See § 257.*)

§ 191.

In some rare cases the *swelling of the external genital organs inflames*, and the parts become hard, hot, red and painful ; added to this, there is general feeling of being unwell, and fever. Here medical aid is urgently needed, as the inflammation may go on to mortification of the parts. Previous to the arrival of the medical attendant, the midwife should order the patient to be kept in bed, with the hips somewhat raised, that the swelling may be protected from pressure, and a warm soothing application, such as a bag of hot bran.

§ 192.

In many pregnant women, the veins of the legs and external genital organs swell and widen. These enlarged veins are seen in part as fine bluish-red markings in the skin, in part as thicker bluish cords lying beneath it, or as firmer distinct prominences—the so-called knotted or varicose veins. They generally feel soft to the finger, are easily pressed down, but spring up again immediately the finger is removed. They are usually found on both sides, but are generally worse on one side than on the other. Many women clearly have a special tendency towards these enlargements of the veins, for they get them in their very first pregnancy, and often in an early period of that, whilst others may escape all their lives, and yet bear many children. If the mode of life is suitable and quiet, they are but rarely the cause of any difficulty, and then it is but for a time. But if the sufferer has to undergo severe bodily labour, and particularly if the work requires much standing, the obstruction to the circulation causes the veins to be excessively stretched and distended, and then they get very painful. The irritation then spreads to the surrounding parts ; these begin to swell, and patches of inflammation of greater or lesser size spring up by the course of the distended veins mostly ; and these, if too long neglected, may

become dangerous by discharging matter, or offensive dirty bloody water.

A rare, but very critical occurrence, is the bursting of a varicose vein—through straining, for instance. The outer skin is generally very thin, and if this also gives way, it gives rise to a rapid loss of blood. If the outer skin remains uninjured, the blood poured out beneath it forms a tumour, which gradually becomes darker and darker.

§ 193.

The midwife gives the same advice to a pregnant woman suffering in this way as to one suffering from swelling of the feet (*see* § 189), for both affections are made worse by the same causes. If the veins are much swollen, an elastic stocking should be recommended, or at least the daily careful bandaging of the leg from the toes upwards. This is very important. If a scab begins to form on the skin, already thinned, the danger of bursting is great, and therefore double caution and rest are necessary.

If the affected parts become very painful, and begin to swell round the veins, and get hot and tender, the patient must lie down, and make use of cold water bandages. If this is done, improvement generally sets in at once. If this should not be the case, however, and if in addition the patient should feel unwell, a medical man should be called in.

If a varicose vein should burst, a medical man should be fetched at once. If the bleeding is external, the midwife should try to stop it by pressing her finger over the bleeding point, or by soaking a pad of linen in vinegar and water and binding it tightly over the spot; or a penny may be folded in a bit of linen or calico, and bound tightly on. If the blood is poured out under the skin, cold water bandages should be applied.

CHAPTER V.

RUPTURES IN PREGNANT WOMEN.

§ 194.

Occasionally, a fold of intestine or a piece of omentum is forced through an opening in the abdominal walls, forming a more or less elastic tumour—a rupture. The opening through which it comes may be one of the natural openings, made weaker and wider by disease; or it may be an entirely new one. According to their situation, we distinguish four kinds: 1. Inguinal rupture, that forms just above one of the labia, and sinks down into it as it grows larger. 2. Femoral rupture, forming a little more outwards than the other, more over the thigh. 3. Umbilical rupture, forming in or close to the navel. 4. Abdominal rupture, forming elsewhere than in the three preceding kinds, usually in the white line.

When the patient is lying on her back, these swellings disappear of themselves, or on very slight pressure, the contents going back again into the abdominal cavity; they return, however, on standing up, or when the sufferer coughs or presses down.

If a pregnant woman has such a rupture, the midwife should direct her to a medical man or a surgical instrument maker, who will fit on a proper truss, to keep the rupture from coming down. Without such a support there is danger of the rupture *becoming strangulated*. It will then get painful, and cannot be pushed back as usual; obstruction of the bowels comes on, and vomiting, and if medical aid is not quickly procured, the parts mortify, and the death of the patient is the result.

§ 195.

Inguinal and femoral ruptures disappear of themselves about the fifth month of pregnancy, for the reason that the rising womb forces the intestines and

omentum, that lie behind the openings, upwards (if these parts have not grown to the sac of the rupture), and closes up the openings. When this is the case, it is well to lay the truss aside, as it is not only unnecessary now, but it often no longer fits, and causes injurious pressure.

Umbilical and abdominal ruptures occasionally commence during pregnancy, or enlarge at this period. They sometimes cause great inconvenience, especially umbilical ruptures, which may become strangulated if the patient is not careful.

Pregnant women who suffer from rupture should be particularly careful about keeping the bowels open regularly; they should avoid indigestible and windy food, and be very cautious in any heavy work. If the rupture does not disappear in the course of the pregnancy, or if it increases, the midwife should strongly advise her charge to see a medical man. If symptoms come on that would lead one to fear strangulation of the rupture, the midwife must demand that a medical man be called in as quickly as possible. Until his arrival the patient should lie still in bed, and take nothing but liquid nourishment.

CHAPTER VI.

VOMITING IN PREGNANCY.

§ 196.

Nausea and *vomiting* have already been spoken of as about the commonest disorders of pregnancy. Vomiting can often be kept within bounds by a cautious manner of living, and by a careful choosing of the food and drink—a thing every woman ought to pay attention to. (*See* § 69.) If the vomiting is severe, coming on nearly after every meal, and if between meals she is constantly tormented with nausea and

salivation (excess of spittle), the midwife must urge her to call in a medical man, before her strength has suffered too much. Sometimes the vomiting depends on some disorder of the womb, or of the neighbouring parts within the pelvis—for example, a strangulated rupture (*see* § 194), and can be relieved by the cause being removed. In other cases great poorness of the blood is the cause, and here again the medical man can help.

Vomiting may prove fatal by its violence and long continuance. As soon as *fever* is added, pains arise in the region of the stomach, and wasting and exhaustion advance steadily. This result must be feared. Premature labour, usually after the child is dead, sometimes saves the patient's life, but not always. Amongst the means the midwife can make use of temporarily to stop the vomiting, in the absence of the medical man, the following are the most effective: perfect rest to the patient, as any movement increases the stomach's irritability; laying several thicknesses of folded blotting-paper soaked in rum upon the pit of the stomach, and the sucking of pieces of ice. A tablespoonful of good wine is sometimes useful, but it cannot always be borne. [I should recommend the midwife to try a teaspoonful of cold water, or soda-water, every ten minutes, and a mustard plaster over the pit of the stomach, taking care to *keep* the patient's head as low as the rest of the body, or even lower.]

CHAPTER VII.

THE DEATH OF THE FŒTUS DURING PREGNANCY.

§ 197.

The fœtus may die at any period of pregnancy. *The death of the fœtus may be suspected* when all its movements cease, and the heart-beat cannot be heard anywhere; if the pregnant woman gets a more or

less severe attack of shivering; if she experiences a feeling of weight and cold in the lower part of the belly; if the womb does not increase in size, and the breasts become soft. Yet all these signs are deceptive, and the midwife must be careful of speaking out her suspicions; least of all should she terrify her patient by incautious and anxious expressions. If, in addition to the above-named signs, the health of the mother should suffer, a medical man should be consulted.

§ 198.

As long as the membranes are uninjured, and air cannot enter the womb, the dead child does not become putrid; but all the parts, with the exception of the bones, undergo a gradual softening, on the outside from the waters, on the inside from the serum or red water of the blood, which after the stoppage of the circulation oozes through the walls of the blood-vessels. In the first weeks of pregnancy, a dead fœtus may be completely dissolved in this way. If it is older, the softening shows itself first in the outer layer of skin, which separates from the underlying blood-red true skin. Later on, the parts uniting the bones of the skull soften to such a degree that the bones can be moved freely under the scalp; the belly becomes more and more distended by fluid collecting in its cavity; the navel cord and placenta become shrunken and soft. The membranes hold out longest of all; they therefore generally give way only during labour. The waters are discoloured and turned to a green or brown by being mixed with the motions of the child, cast-off skin, and the watery parts of the blood. They are of an acrid character.

In other cases the fœtus dies and shrivels up within the womb, the waters being diminished in quantity. This does not often happen in a simple pregnancy, but more frequently in cases of twins, where the dead fœtus is retained within the womb by the side of a living one.

§ 199.

A foetus that has died during pregnancy is usually cast off quickly; it is rarely retained a few weeks. During the labour the midwife should give just as much attention as with a living child, as the signs of the death of the foetus are always uncertain. The labour is frequently lingering, through weakness of the pains.

If the child is supposed to be dead, and labour does not come on, a medical man should be applied to, even if the mother is quite well.

Under all circumstances, the midwife should urge the speedy calling-in of a medical man if the waters break, and no pains come on, or if they are too weak to do any good; for as air has now free access to the child, it quickly becomes putrid, and it is very dangerous to the mother to have any decomposing substances in her womb (*see* § 312).

CHAPTER VIII.

PREGNANCY OUTSIDE THE WOMB (EXTRA-UTERINE PREGNANCY).

§ 200.

Extra-uterine pregnancy takes place when the impregnated ovum develops in the ovary, or in one of the Fallopian tubes, or in the abdominal cavity. It can grow for a time in all these cases. It is only rarely that the ovum continues to develop beyond the fifth or sixth month, and then only in abdominal pregnancy, and it is an exceptional thing for the pregnancy to go on to the full term.

It is very difficult to make sure about such a pregnancy. At the commencement the ordinary signs of pregnancy are observed. The monthly flow usually ceases, but occasionally an irregular discharge of blood

takes place sooner or later. The womb increases in size during the first month, and the breasts generally swell a little. If the ovum goes on growing as far as the second half of pregnancy, the different parts of the foetus may be distinguished, and its movements felt, sometimes more plainly, sometimes less so, than usual, and the foetal heart-sounds can also be perceived. On the other hand, the uterine murmur cannot be heard.

§ 201.

If the ovum develops in the ovary, or in a Fallopian tube, occasional sharp pains come on in the lower part of the abdomen, from the second month, in consequence of the distension these parts undergo from the growing ovum. Often as early as the end of the second month, more frequently in the third or fourth month, rarely later than this, rupture of the ovary or Fallopian tube takes place. This is accompanied by great and *increased pain*, and symptoms of *internal bleeding*, blanching and coldness of the skin, and great prostration even to fainting. The violence of the bleeding may cause death in a few hours. If the bleeding is not so great, death usually follows in consequence of inflammation of the membrane lining the abdominal cavity and intestines (peritonitis, or inflammation of the peritonæum). In some fortunate cases the patient may recover even; the ovum shrivels up in the abdominal cavity, whilst from the womb a discharge makes its exit similar to the lochial discharge, mixed with shreds of decidua.

If, therefore, a midwife is in attendance on a pregnant woman about the periods mentioned above, and violent attacks of pain come on in the lower part of the abdomen, she must bear in mind the possibility of an Ovarian or Tubal Pregnancy, and urge the immediate calling-in of a medical man, especially if signs of internal hæmorrhage show themselves at the same time. To keep the bleeding within bounds as much as possible, the patient should keep perfectly still in

bed ; cold wet cloths should be applied to the lower part of the abdomen, or a *bladder half filled with pounded ice* ; and if the exhaustion is extreme, nourishment should be given in the manner mentioned in § 169.

§ 202.

When the membrane surrounding the ovum is developed from the ovary or tube, it is very rarely capable of the distension required for the further growth of its contents, as it generally is in abdominal pregnancy. In the latter case the ovum, *surrounded by its coverings, lies in the true pelvis behind the womb*, which is forced forwards and upwards as it grows. Then arise the same disorders that accompany displacement backwards of the pregnant womb, and the one condition is distinguished from the other principally by the condition of the base of the womb, as it is ascertained externally above the pubic bones (*see* § 150). In the later months of abdominal pregnancy, when the ovum is almost altogether above the pubic bones, when the foetal movements and heart-sounds, plainly distinguished, leave no doubt as to the case being one of pregnancy of some kind, then the most weighty sign of abdominal pregnancy is to be able to grasp the base of the empty womb about a hand-breadth above one or other branch of the pubes with one hand, and with the other hand in the vagina to lay hold of its lower part and move it between the two.

§ 203.

Sometimes the ovum reaches maturity in the abdominal cavity without any particular disturbance of the health of the patient. At the end of pregnancy pains come on, which, however, have no effect in advancing the labour. The midwife now finds the vaginal portion of the womb close behind the pubes, the external mouth closed, or nearly so. No bag of waters is to be felt within it ; nor can any part of the child be reached, or

if it can, it is through the posterior vaginal arch—*behind the womb*. *The pains gradually cease, the child dies, and a slimy discharge escapes from the womb*, with shreds of decidual membrane intermingled. Much more frequently, however, the child dies at an earlier period of the pregnancy. The happiest termination of abdominal pregnancy is that in which, after the death of the child, the waters gradually disappear, the membranes contract round the shrivelled remains of the child and placenta, till at last all becomes changed into a peculiar heavy mass, called by the Germans a *Steinkind* (stone-child). Such a mass may be retained within the abdominal cavity—with more or less disagreeableness—for years; a new pregnancy may even go on with the remains of the old still in the body of the mother.

It is worse when the *fœtal coverings take on inflammation*. The inflammation may be fatal from its violence. More frequently it is slower in its course, and then as a rule the coverings suppurate (matter is formed), especially if the patient does what is improper under the circumstances; the parts adjoining the coverings take part in the inflammation, and the matter is discharged either outwardly through the abdominal walls, or inwardly into the intestines, bladder, or vagina. The ovum, completely disorganized, gradually escapes in this way piecemeal. These processes are always associated with a long and dangerous illness, yet recovery is possible.

It scarcely need be stated that if a midwife suspects extra-uterine pregnancy, medical assistance should be procured at once.

SECTION II.

IRREGULAR LABOUR.

§ 204.

All the possible deviations from the regular course of labour will not be considered separately in this

section, but principally those it is important for the midwife to have a knowledge of, on account of the frequency of their occurrence ; or because the midwife can guard against them ; or because it is important that they should be recognised early, and medical assistance sought ; or, finally, because the midwife herself can render more or less adequate assistance in the absence of a medical man. The rarer irregularities, which are only just pointed out here, will be easily recognised by the midwife as deviations from natural labour when once she has become thoroughly familiar with its regular course. *In every case in which an unusual condition of things is found, it is the duty of the midwife to seek the assistance of a medical man.*

The causes of irregular labour lie either in the mother, in the foetus, or in the other parts of the ovum.

I.—IRREGULAR LABOUR DEPENDING ON THE MOTHER.

CHAPTER I.

IRREGULAR PAINS.

§ 205.

Pains are irregular when they are either *too strong, too weak, too painful*, or when they are *spasmodic*. Pains that are too painful and spasmodic are irregular under all circumstances. But weak or strong pains can only be called irregular when they are not proportionable to the resistance to be overcome—that is, when they are not strong enough to overcome the resistance, or when they are stronger than is required for that purpose. With the exception of the pains that are too strong, they are all characterized by one common symptom—that is, they either do not help forward the labour at all, or not sufficiently.



1. *Too strong pains.*

§ 206.

We call the pains strong when they follow one another quickly, and last long, and are accompanied by sharp pain and forcing, and when, whilst they are on, the womb becomes distinctly but uniformly hard. The pains are too strong when they are either distinctly stronger than the case requires, or when the violence of the uterine contractions reaches such a height that they become in themselves dangerous to mother and child.

Many women have excessively strong pains, even from the commencement of every labour, without any apparent cause. In others, the pains reach this height during the course of labour in consequence of the greatness of the resistance—for example, from narrowness of the pelvis.

§ 207.

If the position of the child is favourable, and neither the pelvis nor the soft parts, as is usual in those who have borne children, offer any special resistance, the effect of too strong pains is undue rapidity of labour. This occurs the more easily if at the same time the child is small. If the womb has been emptied suddenly, it often contracts but incompletely, whence there is risk of flooding, or even inversion of the womb. (*See* § 349.) Moreover, in consequence of the rapid emptying of the abdominal cavity, the blood rushes violently from the other parts of the body into the blood-vessels of the abdomen, and a faint may be the result.

In first-child cases, if the strong pains force the child through the neck of the womb and the perinæum before these parts are prepared, they are more or less wounded. But if the resistance opposed by the pelvis is so great that these strong pains cannot overcome it, then there is danger of rupture of the womb, or of the womb being torn away from the vagina, unless exhaustion comes on first. (*See* §§ 232, 233.)

§ 208.

The child necessarily suffers from the disturbing influence of strong and almost uninterrupted uterine contractions (*see* § 86), and in consequence frequently comes into the world apparently dead, or even dead in reality.

If the pains are too strong, the midwife must insist on a medical man being called in under all circumstances, even if he cannot be on the spot until after the labour is over, as will generally be the case unless the pelvis is narrow. What the midwife can do in moderating the pains, and warding off the effects of the violence of them, is as follows : she lets the patient lie flat and quiet on her side ; she forbids all bearing-down and holding of the breath, and removes all supports from the hands and feet ; she supports the perinæum carefully in the usual way without wishing to keep the head back by violence ; when this is born, she tries to prevent the too rapid passage of the buttocks by moderate pressure, prolonged until a new pain comes on, whilst at the same time the other hand is placed on the base of the womb, whereby she watches over its contraction.

2. *Too feeble pains.*

§ 209.

The midwife recognises the pains as weak by their coming on at long intervals, by their being very short, but slightly painful, and of little effect in furthering the labour. Whilst they are on, the womb shows but little hardness and tension, and in the intervals it relaxes completely. The pains are too weak either when they are altogether unable to overcome the resistance—*i.e.*, bring the child—or not able to do so as quickly as special circumstances render it necessary.

The pains are frequently weak all through the labour. This is principally the case in very young or elderly women with their first child, in women who

have been brought low by sickness, distress, and cares, or who have had repeated hard labours. There are also many women, otherwise healthy, whose pains are weak in every labour. If there is too great distension of the womb by excess of waters, or twins, there is generally some weakness of the pains.

Frequently the pains become weaker during the course of a labour because the patient has exerted herself by assisting (that is, bearing-down and straining voluntarily) too early, and when it has been of no use.

If there is some obstacle to the expulsion of the child, such as narrowness of the pelvis, or unfavourable position or attitude of the head, etc., the pains, although they may have been strong at first, sometimes gradually grow weaker, because the strength of the womb has been exhausted by the resistance.

§ 210.

If the position and attitude of the child are right, and the genital passages are of proper width, weak pains are of no importance in the period of dilatation so long as the membranes are entire, as delay under these circumstances is injurious to neither mother nor child. In cases of irregular presentation, or of narrow pelvis, such as require the calling-in of a medical man, weakness of pains in this period of the labour is not associated with any special disadvantage. The midwife must make things as comfortable for her patient as possible; she must not allow her to "assist," but should encourage her to be patient, and if the labour is very long, give her a cup of beef-tea or broth, or weak beer, or water with a little wine in it, now and then. If her patient is wearied, she must make everything as quiet as possible, so as to encourage sleep.

§ 211.

But the consequences of lingering labour are worse *when the membranes rupture too early, and the pains do not increase in strength*, even although everything else

may be right. Instead of the smooth yielding bag of membranes, the hard uneven head of the child now presses immediately upon the lower part of the womb, and the longer this pressure lasts the more the womb is irritated. Just in proportion as the waters flow off, and the womb is emptied, and contracts closer and closer round the child, in like measure are the blood-vessels that run in the uterine walls compressed, and the inflowing of bright red arterial blood is checked; the child fails to get its due refreshment in the placenta, until at last actual want of breath comes on, and it is in danger of being suffocated. The waters that still remain within the womb, especially if mixed with the curdy slime and dark motions of the child, may become putrid from the admission of air; and if there are sores or wounds in the maternal genital passages, there is danger of blood-poisoning from the sores soaking up some of the putridity.

Wherefore, if the membranes have ruptured too early, the midwife must endeavour to keep off the dangerous consequences of a lingering labour by strengthening the pains. This she seeks to do by the application of dry or moist heat over the abdomen (hot flannels, wet or dry); and if this fails, she must call in a medical man.

§ 212.

If the pains still remain weak after the rupture of the membranes, and complete dilatation of the mouth of the womb—that is, in the period of expulsion—the midwife must not delay too long to call in a medical man, and she must delay the less if much time has already been consumed. Sometimes she will succeed in improving the pains by changing the position of the patient, or by applying hot cloths to the external genital parts. In other cases, where the head is low down in the pelvis, the patient can supply the want of actual pains by bearing-down with the abdominal muscles, and this the midwife must tell her to do,

and show her how. The midwife must pay particular attention to the sounds of the child's heart; and if they become weaker and slower, medical aid must be procured at once.

§ 213.

If pains that have been good at first grow feeble in the period of expulsion, it is probably because the strength of the womb has all been spent in overcoming some obstacle. In this case the midwife must let a medical man be sent for without delay, especially if the patient feels wearied and done up. Until the arrival of the medical man, the midwife should cease all attempts to excite the womb to fresh contractions; she should rather spare her patient's strength, and not let her bear down, but keep her as quiet and comfortable as possible, and give her a little broth or beef-tea, or wine and water, from time to time.

We shall speak later on of weak pains in the after-birth period.

3. *Too painful pains.*

§ 214.

Sometimes the uterine contractions are unusually painful, but at the same time short, and of no value; the patient feels the pain even at the commencement of the contraction, before the hardening of the womb can be felt outwardly: the degree of hardness does not correspond to the severity of the pain. This irregularity is observed principally during the period of dilatation in sensitive people, young and tender girls in their first labours. In these cases the midwife should see that her patient is lying in a comfortable position; she should forbid all bearing-down, cheer and calm her spirits by friendly encouragement, and make the needful examinations with as much tenderness as possible. Hot cloths or other warm applications should be applied to the belly. If these means do not quickly relieve, a medical man should be called in.

§ 215.

As a rule, the womb is only slightly tender on gentle pressure during a pain, and between the pains not at all. Sometimes, however, during the course of the labour the womb becomes very sensitive to pressure; the pains are tormenting, but useless. A narrow pelvis is most frequently to be blamed for this, in consequence of which the soft parts of the mother are liable to be much *bruised*. The temperature of the body is sensibly raised withal. In such a case medical aid is always necessary, and the midwife must bear in mind that *in this case it is still more improper to try to strengthen the pains, and encourage the patient to bear down, than in a case of uterine exhaustion.*

§ 216.

The pains may be very tormenting, and yet useless, from distension of the bladder (*see* § 99). If the bladder is not quickly emptied, the painful uterine contractions become weaker and more useless, the effectiveness of the abdominal pressure is interfered with, and the labour comes to a complete standstill. Generally, if proper care is taken, the midwife may prevent any distension of the bladder (*see* § 106). If it should have taken place, however, and if, when the midwife first discovers it, the head is so low down that she cannot pass a catheter, a medical man should be called in at once, for the danger is not small, and is constantly increasing.

4. *Spasmodic pains.*

§ 217.

Spasmodic pains are those in which the *lower parts of the womb contract with unusual vigour*, so that they are more powerful than the upper, or at any rate equal them, by which of course the *expulsion of the uterine contents is hindered*. All spasmodic pains are

painful to a high degree. Sometimes the patient is feverish under these circumstances, with a hot skin and great thirst; more frequently, however, the face is white and pinched, and the skin cool.

There are *three kinds of spasmodic pains*.

Spasm in the external mouth of the womb only comes on during the period of dilatation, principally in first labours. The mouth of the womb is painful to the touch, and contracts with every pain, instead of dilating. The patient complains of an unusually severe pain in the back (sacrum). The resisting mouth of the womb may be driven deep down into the pelvis by the presenting part of the child, and even torn. More rarely this spasm comes on after a part of the child has already passed through the incompletely dilated mouth of the womb, or rather after being forcibly drawn through, principally in breech and foot presentations, after the extraction of the buttocks.

Spasm in the neck of the womb and lower part of the body usually shows itself first during the period of expulsion. The patient feels intolerable pain in the back (sacrum) and over the pubes; she cannot bear down, and tosses about in restless agony. Nor are the intervals between the pains complete periods of ease. By examining internally, the midwife discovers that, notwithstanding the apparent vigour of the pains, the mouth of the womb remains perfectly soft all through them, and that the presenting part of the child does not advance. External examination reveals the fact that during a pain the womb is flattened above the pubes, and unusually hard and tender, whilst the fundus is softer, or even distended like a ball. Even between the pains the tenderness and hardness above the pubes do not disappear completely.

In the third and rarest kind of spasm, the so-called tetanus of the womb, the womb contracts rigidly and continuously, and with great pain, round the child, without, however, overcoming the resistance offered by the lower part.

§ 218.

Real spasmodic contractions are very rare. They are only observed after the escape of the waters, especially when they have escaped prematurely. Sometimes a chill from incautiously throwing off the clothes is to be blamed as the cause. More frequently, however, they are caused by irritation of the mouth and neck of the womb from too frequent or roughly conducted examinations, by attempts to pass the hand into the womb, for the purpose of turning, before the mouth of the womb is sufficiently dilated, or by early and violent dragging at the child by the feet. Tetanic spasms of the womb scarcely ever occur but in cross-births, when assistance has not been given in proper time.

§ 219.

As a matter of course, the midwife *must avoid doing anything*, when engaged at a labour, *that may cause spasms of the womb*. If they should come on, however, she must not delay to procure medical assistance, as she herself is in possession of no means of allaying them. For as long as the spasms last, labour is at a standstill, the patient is suffering the most agonizing pain, and the life of the child, which is always in danger by prolongation of the labour after the waters have escaped, is here specially so, from the navel cord being exposed to violent pressure from the womb. Until the arrival of the medical man, the midwife should proceed as she has been taught in § 214 in cases of painful contraction. She may also give rectal injections of strong camomile tea.

Uterine spasm in the after-birth period will be considered later.

CHAPTER II.

FAULTY POSITIONS OF THE WOMB DURING LABOUR.

1. *Leanings or Obliquity of the Womb.*

§ 220.

Two kinds of obliquity of the womb are distinguished, according as its fundus leans to one side or forwards.

§ 221.

When it leans sideways, the base of the womb will be felt from the outside to be leaning towards one side or the other, whilst the opposite side of the abdominal cavity is taken possession of by intestines. On examining internally, the mouth of the womb will be felt on the side opposite to that occupied by the fundus. If the midwife finds the mouth of the womb inclined towards the same side as the base, it indicates an irregular shape of the womb. This, however, is a very rare occurrence.

§ 222.

If the womb leans very much to one side, it may have an injurious effect on the labour. Thus, the breech of the child falling down to one side along with the base of the womb, the head, if not already fast in the pelvis, will advance towards the opposite side. It will thus happen that if the womb lies towards that side faced by the child's forehead, this part will be lower in the pelvis than the back of the head; whilst if inclined to the side faced by the back of the head, this will be lowest (*see* § 267). It may even happen, if the head is still high and the walls of the womb are soft, that the head may be carried towards one side or the other, completely away from the pelvic inlet.

§ 223.

If the midwife discovers such a position of the womb during labour, she must make the patient lie

on the proper side—that is, on the side opposite to that occupied by the base of the womb. For if a woman in labour lies flat on her side, the base of the womb, being the heaviest part, sinks down to the side, and there is nothing in the abdominal cavity to support it, the mouth of the womb at the same time going in the opposite direction, and thus the direction of the child's head in relation to the pelvic inlet is altered. It is all the more necessary to put the patient on her side if, on account of the faulty position of the womb, the presenting part (*see* § 267) of the child has already taken a wrong direction or position. Usually these measures succeed in rectifying the position of the womb, but if they do not, a medical man must be called in.

§ 224.

When the womb leans too far forwards, it is called a *hanging belly*, for the belly in this case hangs low down over the pubes, and in a very bad case it may even rest upon the thighs, not only when the patient is sitting down, but also when she is standing up. The usual cause of this condition is a too great yielding and softness of the abdominal walls, on which account it is most frequently met with in women who have borne several children. We only find this condition in women bearing their first child if the pelvic inlet is narrowed, and the womb in consequence is raised up higher than usual, especially if at the same time the pelvis is very sloping, and the abdominal cavity of no great depth. In the higher degrees of hanging belly the womb is always bent a little near the internal mouth, as the neck cannot rise up behind to the same degree as the base falls down in front. At the same time the anterior wall of the womb usually bulges out like a bag above the pubes. Along with the womb, the child itself hangs forward. The foetus may sink so deep into the pouch formed by the anterior uterine wall, that the presenting part lies more in the pouch than over the pelvic inlet, and it can only

be reached internally by raising the womb above the pubes at the same time.

There is no difficulty in recognising this condition so long as the midwife carries out her external examination with the needful amount of observation. With a pregnant woman whose womb is in its proper position, the midwife can lay her hand flat upon the pubes, and pass it upwards over the abdominal walls, without altering the direction towards which the palm of the hand looks; but if the belly hangs down, she cannot do this without turning the palm more or less upwards first.

§ 225.

This pendulous condition of the belly becomes very burdensome in pregnancy on account of the painful feeling of dragging and tension in the abdominal walls, the frequent desire to pass water, the difficulty in walking, etc. To relieve this condition the midwife should recommend the wearing of a good binder, or abdominal belt with shoulder-straps or braces, which will rather grip *under* the belly, and raise it upwards, than press it forcibly backwards.

§ 226.

This condition of hanging belly in its higher grades may have a very injurious effect on the course of the labour if it is overlooked and neglected. Generally the pains are feeble from the beginning, and the mouth of the womb dilates slowly. The head remains high up above the brim of the pelvis, and does not completely block up the pelvic inlet; when the membranes rupture, therefore, the greater part of the waters escape, and an arm or the navel cord may easily slip down by the side of the head. After the rupture of the membranes, the pains are often insufficient to drive the head into the pelvis; or it enters it in an unfavourable axial direction—*i.e.*, with its face looking a wrong way, in which it cannot be moved further (*see* § 269). Then

the womb gets exhausted and becomes painful; the soft parts, bladder and vagina, lying between head and anterior vaginal wall, are too much crushed. The child suffers from the uterine contractions after the loss of the waters (*see* § 86). The danger, naturally, is greater in proportion as the pelvis is narrower.

§ 227.

In the meantime, if the pelvis is roomy, and other things are favourable, the midwife will be in a position to ward off the above-mentioned inconveniences by proper management. From the commencement of labour she places the patient flat on her back, puts on a good binder, and strictly forbids her to bear down in the least in the earlier stages of the labour. In the slighter cases this is sufficient to bring the womb and its contents into the proper position in relation to the pelvis, and the head accordingly enters in a regular manner. In the worst cases, however, especially if the pelvis be rather narrow, the midwife will not succeed in this way. Here, as soon as the mouth of the womb dilates, and especially after the membranes are ruptured, she must place both her hands upon the abdomen, and lift the belly up, or press it back, during every pain, until the head has got into a proper position within the pelvis. When this has once taken place, no further help is needed. If this method of procedure, however, does not bring about the desired effect after being persevered in steadily for some time, a medical man must be called in.

2. *Falling of the Womb complicating Labour.*

§ 228.

Falling of the womb during labour is one of the rare complications, and always requires the attendance of a medical man. Until his arrival the midwife should proceed as follows: she should lay her patient flat on her back or side, and forbid all bearing-down during

the pains. If the womb still lies inside the pelvis, she should try to keep it back with her hand, first oiled. If a part is lying outside the external genitals, however, it should be supported by a napkin dipped in oil, and provided with a hole for the mouth of the womb; the four corners are drawn under and over the thighs in a suitable direction.

CHAPTER III.

FAULTY CONDITION AND POSITION OF THE MOUTH OF THE WOMB.

§ 229.

Sometimes the mouth of the womb shows itself very unyielding during labour, and dilates with difficulty, without any apparent alteration of its structure. In other cases, the unyieldingness depends on some hardening, some old scar or improper union of parts, or cancerous disease. The pains are then very agonizing, and the patient complains of continual sharp pain in the back. If timely assistance be not given, the mouth of the womb is not unlikely to be torn; the midwife must therefore seek timely aid from a medical man. Until his arrival she must keep her patient as quiet as possible, and forbid all bearing-down during the pains.

§ 230.

Not unfrequently the midwife finds at the commencement of labour that the child's head is already low down in the pelvis, but that it is still surrounded by the lower part of the womb, and that its mouth is very little dilated, that it is very high up and far back, so that it is difficult to reach with the finger. The first stages of labour are in this case very slow and painful. During the pains, at first, only the anterior wall of the lower segment of the womb is pushed down

by the child's head, and the mouth of the womb gives way more and more, backwards and upwards, without dilating. At last, after much labour, the anterior cervical wall withdraws itself from the head, the mouth of the womb gradually descends into the middle line of the pelvis, and dilates, often with surprising quickness. Sometimes, however, the anterior lip undergoes considerable swelling from being crushed up between the head and the anterior pelvic wall, and appears under the pubic arch as a blackish-blue tumour.

§ 231.

The midwife in this case also must let her patient lie flat down on her back or side, and not let her assist the pains. She should restrain herself from attempting to dilate the mouth of the womb by pulling and dragging, or trying to put it right. If the labour proves unusually lingering, and disquieting symptoms come on, a medical man should be called in immediately. If the swollen anterior lip of the womb is forced down under the pubic arch, the midwife should press it back gently with her fingers, previously oiled.

CHAPTER IV.

RUPTURE OF THE WOMB AND VAGINAL ARCH.

§ 232.

Rupture of the womb is a rare but most dangerous complication of labour. It is generally caused by violent contractions, when the expulsion of the child is prevented on account of straitness of the genital passages, especially of the pelvis, or on account of unusual size of the child's head (water on the brain), or some faulty position of the child; or the womb is ruptured, without any strong pains, if its structure has undergone softening or injury anywhere—for

example, from the pressure of a sharp ridge or point of bone in the pelvic inlet. Rough and violent efforts at turning or extraction of the child may also cause the misfortune.

The rent almost always occurs in the neck of the womb, which has been stretched and thinned lengthways, after the internal mouth is withdrawn from the presenting part of the child (*see* § 80), whilst the external is jammed between the child and the brim of the pelvis. The child is then driven into the abdominal cavity, and soon dies from separation of the after-birth. The mother often dies, also, within the first twenty-four hours.

The midwife should be on her guard against rupture if the pains are very violent, or the child makes no advance, or if the womb gets unusually painful and tender to the touch at any particular spot.

§ 233.

In other cases it is not the womb that gives way, but the vaginal arch, when a considerable portion of the child *has passed through the mouth of the womb*, but, on account of some resistance in the genital passages, *can advance no farther*. This is especially to be feared if the pelvis is narrow, and the external mouth of the womb has withdrawn from the child's head before this has entered the pelvis. In the same way, an attempt to push back a part of the child that has already passed the mouth of the womb, for the purpose of turning, may tear away the womb from the vagina. As in rupture of the womb itself, *the child is here expelled through the rupture into the abdominal cavity*. Folds of intestines fall through the rent in this case more frequently than in rupture of the womb.

§ 234.

At the moment the rupture takes place the patient frequently feels a cutting pain in the lower part of the belly ; she grows pale, is agitated, and in anxious fear ;

the room grows dark before her eyes; she vomits, and breaks out into a cold sweat. In other cases the rupture takes place without any striking outward manifestation, and only a blanching of the face, a feeling of weakness—sometimes even a fainting fit—indicates the occurrence. As soon as the contents of the womb have escaped into the cavity of the abdomen, the pains break off at once. The midwife feels that the shape of the belly is altered; she recognises *parts of the child lying loose, just underneath the abdominal walls, and near them the empty, contracted womb*. On examining internally, she either finds that the presenting part of the child has altogether vanished from the pelvic inlet, or that it is now lying quite loose, and can be easily pushed back with the finger. At the same time some blood escapes from the vagina. It is only where the head is firmly fixed in the pelvis before the rupture takes place that an internal examination makes no revelations, and that no blood flows.

Generally, the flow of blood from the torn wound is of no importance, and ceases as soon as the womb is emptied and contracted. If the rent does not go through the peritoneum, however, and the uterine contents do not escape, the hæmorrhage may be more considerable. The blood either gathers under the peritoneal covering of the womb, and between the folds of the broad ligament, on the side of the rent, forcing them upwards, and forming thus a tumour by the side of the womb that is usually very tender, or it sinks down between the bladder and vagina, and forms an equally tender and elastic tumour in front of the womb.

§ 235.

The most important part of the midwife's duty is to discover the earliest signs that point to the possibility of a rupture of the womb or of the vaginal arch, and then to send for a medical man at once, as he will often be in a position to avert the threatened danger. She must, of course, avoid everything likely to facilitate a rup-

ture. If the misfortune has occurred, she cannot fitly undertake anything of herself, but must procure medical aid as quickly as possible. She must warn her patient to keep as still as possible, and not to press and force down; and if she gets very weak and faint, she should give her a little nourishment cautiously, as laid down in § 169.

CHAPTER V.

ILL-FORMED PELVIS.

§ 236.

The pelvis is ill-formed if too wide or too narrow.

§ 237.

The pelvis may be too wide throughout, or too wide only in one part—for example, at the inlet; whilst in its other parts it may be of proper size, or even too narrow. The midwife is not in a position, however, to distinguish a pelvis that is too wide from one of ordinary width in a living woman, and at most can only suspect it from its effects. A too wide pelvis is often the cause of descent or falling of the womb, or of a too hasty labour, even when the pains are not strong and the child not small, especially in women who have borne children, in whom there is least resistance from the soft parts.

§ 238.

The recognition of a pelvis that is too narrow is of more importance for the midwife. There are great varieties of narrowness, both in form and degree. The most frequent forms of narrow or contracted pelvis are the following:—

1. The *universally contracted pelvis*, in which all the diameters are shortened equally, from one-third to two-thirds of an inch, rarely more. This is not found

in small and delicately built women only, but also in those of middle size, and even in big women. The midwife may suspect this deformity when she finds the hips unusually small in a pregnant woman otherwise well built; and on examining internally, she is able to reach the promontory more easily than usual, and to follow the side walls of the pelvis with her finger farther backwards than usual (*see* § 60). She gains further information by observing the course of the labour.

§ 239.

2. The *flat pelvis*, which is principally narrowed at the pelvic inlet, and exclusively from before backwards; whilst from side to side it may be of ordinary dimension, or even more. The back and front measurement at the pelvic inlet may be shortened to $3\frac{1}{8}$ inches, but only exceptionally more than this. The cause of this contraction is that the sacrum is sunk down forwards between the hip bones, so that the promontory is brought nearer to the symphysis of the pubes. The greater the contraction, the more easily will the midwife reach the promontory internally; and on examining the side walls of the pelvis in the same way, she will convince herself that they curve outwards in a proper manner.

This deformity of the pelvis is not unfrequently met with in women otherwise well built who have never suffered from any disease of the bones.

More frequently, however, it occurs in those who have suffered from rickets in childhood. The midwife may conclude that this disease was present in early life upon learning that her patient began to walk very late; that her legs are crooked, or remarkably short, thick, and clumsy, or thin and lean; that although the hips are broad, the loins are drawn in, and the walk is waddling and unsteady.

It sometimes occurs, but exceedingly rarely, however, that this contraction of the pelvic inlet depends

upon the projection into the pelvis of the lower lumbar vertebræ which have slipped down over the sacrum.

§ 240.

3. The *universally contracted flat pelvis*, in which the pelvic inlet is the part principally contracted, and that in its back and front dimensions, but in which all the other measurements are also below the usual standard. This form is rarely found except amongst those who have suffered from rickets in childhood. The shortening of the distance from back to front at the inlet is often much more considerable here than in simple flat pelvis; this diameter may fall to 1 or $1\frac{1}{5}$ inch, so that the promontory can be reached with the greatest ease. The cause of contraction of the other diameters lies either in the general smallness of the bones of the pelvis which have been kept back in their growth, or more frequently in a considerable flattening of the side walls of the pelvis, in a narrowing of the pelvic ring towards the symphysis; therefore, when the midwife meets a case in which the promontory is considerably nearer to the symphysis than usual, and when at the same time she can follow the side walls of the pelvis unusually far back, or plainly feel a flattening of them, or even a bulging inwards in the neighbourhood of the socket of the thigh-bone, she may assume with some degree of certainty that it is a case of pelvic deformity of the kind we are now discussing.

Of these forms of contracted pelvis mentioned above, the most frequently met with is the flat pelvis; next, the universally contracted flat pelvis; and, least frequently, the universally contracted pelvis.

§ 241.

The rarer forms of contracted pelvis may be mentioned as follows:—

The *doubled-up pelvis*. This form of pelvis is developed in grown-up people in consequence of a

disease called *softening of the bones*, and which, like the gout, is accompanied by violent pain and lameness. The disease is only frequently met with in some localities, and mostly attacks women who have already had one or more favourable confinements, and gets worse and worse with every fresh pregnancy. The pelvis becoming softened, bulges inwards, as well from above and below as from the two sides. The pelvic outlet is generally the first to suffer. The branches of the pubic bones of opposite sides are sometimes brought so near together that only one finger is allowed to pass between them.

The opposite branches of the pubic bones also draw near to each other in the *laterally* (side to side) *contracted pelvis*. This is a very rare form of narrow pelvis, however. It is found in women otherwise well built in consequence of a born narrowness of the sacrum, which has grown to the hip bones, or women who have a hump in the region of the lower lumbar or upper sacral vertebræ, the result of an earlier inflammation of the bones of the spinal column.

By exercising some care in the examination, such a considerable contraction of the pelvic outlet cannot escape the midwife's notice.

It is more difficult to recognise the so-called *funnel-shaped pelvis*, of regular form and size at the inlet, but narrowing somewhat at the outlet.

§ 242.

Sometimes the pelvis is contracted so as to have a *twist* in it; that is, the symphysis does not stand exactly opposite to the promontory; upon one side of the promontory the side wall of the pelvis is flatter and less curved; the pelvis in this half is narrowed. Slight degrees of this distortion are met with in women who have suffered from rickets in childhood, moderately often in connection with the other changes of the pelvis. Higher degrees, developed as a result of born narrowness of one half of the sacrum, or of an in-

flammation of the sacro-iliac articulation, or of the hip joint, and in which the sacrum and hip bone of the flattened side are grown together, are but rare occurrences.

§ 243.

Finally, in very rare cases, the pelvis is narrowed by bony tumours, badly united fractures of the bony pelvis, or by tumours of the soft parts. In these cases, however, the obstruction is generally so great that it cannot be easily overlooked.

§ 244.

The passage of a full-grown child through a contracted pelvis will naturally be more or less difficult; in some extreme cases it is even impossible. Apart from these extremest contractions, however, the degree of difficulty met with in labour does not depend on the pelvis only, but also on other circumstances—on the position and direction of the child; in head presentations, on the size, hardness, and especially on the position and direction of the child's head, which must be most suitable for passing through the particular form of the pelvis (*see* § 248); and, above all, on the character of the pains. From this it follows that in cases where the degrees of contraction are equal—yea, even in one and the same woman having a contracted pelvis—the labours run very different courses.

§ 245.

Even in pregnancy, contracted pelvis has an injurious effect, inasmuch as it produces a tendency to pendulous belly (*see* § 224). When the womb and child are high up in the abdomen, these removals of the child from its proper position and direction take place the more easily as the walls of the womb are loose and flabby, as is almost universally the case in those who have borne children, and especially in those who have had hard labours. For these reasons, breech and foot presentations, shoulder presentations, or pre-

sentations of the head with the navel cord, or an arm, are much more common in cases of contracted than of wide pelvis.

In head presentations, the entrance of the head into the pelvis is rendered more or less difficult. At the commencement of labour, the midwife usually finds it still upon the pelvic inlet, above the inner mouth of the womb. The cervical canal hangs down empty into the pelvis, and is mostly distended and dilated by the fruit-bladder, which fills up more and more during the pains, without any perceptible advance of the head. If the membranes are not very tough, and at the same time yielding, they frequently rupture before the mouth of the womb is completely dilated; the waters flow off in greater quantity than usual, owing to the high situation of the head, and the neck of the womb falls loosely before it.

If the pelvis is only moderately contracted, the *head of the child well shaped, and in the proper position for entering*, the further course of the labour, so long as it is not artificially interfered with, will be decided by the character of the pains.

§ 246.

If the pains continue feeble, the labour will not make the least progress, however favourable the conditions above mentioned may be. If proper assistance be not now forthcoming, the waters will gradually all drain off; the soft parts lining the pelvic inlet will become more and more irritated by continual squeezing between the head and the pelvic brim; the child will die and decompose; the pains will at last cease; the patient get weaker and weaker; fever will set in; she will lose consciousness, and if help do not come, she may die undelivered.

If the pains are powerful from the commencement, however, or if they gather strength after the rupture of the membranes, so long as the above-named favourable conditions are present, labour progresses slowly, the

head gradually descends into the pelvis (a tumour of the scalp being formed), again dilates the cervical canal, the neck at the same time withdraws itself from off the head, and thus the labour may end without artificial aid, although it will be difficult, and attended by more or less crushing and bruising of the maternal soft parts, and of the child's head.

Frequently, however, the womb gets exhausted sooner or later from its violent efforts, and *delivery by art becomes necessary*.

If the disproportion between the size of the child's head and the area of the pelvis is so great that the one cannot enter the other, either because the pelvis itself is so small, or because a large and hard head is lying in an unfavourable position for entering, both mother and child are in great danger, from which nothing but speedy artificial aid can free them, and this not always. As may be supposed, weak pains can only form the fruit-bladder, dilate the cervical canal, and at last rupture the membranes, by which nothing is gained. (*See ante.*) But if the resistance provokes the pains to unusual violence, as it often does (*see* § 206), there is danger of the womb rupturing, or of being torn away from the vagina, if exhaustion does not come on first. (*See* §§ 207, 232, 233.)

§ 247.

The midwife will see by the foregoing how dangerous contracted pelvis may be to the mother; how even *death* may ensue, before the labour is ended, by rupture of the womb, of the vaginal arch, or from sheer exhaustion. Even after the labour is over, if it has been very difficult, the patient sometimes dies within the first four-and-twenty hours, from exhaustion. But even in less severe cases the woman suffers from the labour, which has generally been prolonged, extremely painful, and accompanied by much bruising of the soft parts. Not unfrequently, inflammation of the irritated parts, accompanied by violent fever, sets

in in the first days of the lying-in period, or even before the labour is ended. The parts that are principally exposed to danger from long-continued and violent pressure are the soft parts covering the promontory and the upper edge of the symphysis, whence those loud complaints, even between the pains, of an intolerable pain principally in the back, as if it were being broken in two; whence also those frequent perforations of the bladder, the vagina, the neck of the womb, that sometimes occur during labour, but more frequently in the lying-in period, when the slough caused by the great pressure has separated.

A further danger to the mother lies in this,—that after the expulsion of the child the womb is so much exhausted that it does not contract completely, so that copious bleeding takes place from the spot where the placenta grew.

The mortality amongst infants during and after labour is greater even than amongst the mothers. It is true that the injuries to the child's head are often grave,—tumours of the scalp, with blood poured out under the skin, crushings of the scalp, overlappings, bendings, depressions, and fractures of the bones of the skull; but the greatest danger lies in the long duration of the labour, especially—as is often the case—if the membranes have ruptured, and the waters almost completely drain off too early, and in the injurious consequences that are inseparable from malposition of the child, and irregular presentations (which will be treated of later on).

§ 248.

It is not enough, however, for the midwife to know the baneful workings of contracted pelvis in general; she must make herself acquainted also with the special injurious influences of at least the commonest forms. When the child can pass at all, the pelvis is entered and passed through (and this is especially true with regard to the head) *in a certain course varying more or*

less from the ordinary, and mainly dependent on the form of the pelvis.

The universally contracted pelvis can, indeed, render labour difficult in the highest degree; but generally, other things being favourable, the passage of the child is permitted. The head enters the pelvis with the back of the head foremost, the forehead being held back above the brim at the side. For this reason, the midwife, even early, finds the smaller fontanelle much deeper than the greater, sometimes so low that it occupies the exact middle point of the pelvis. The head is kept back in this way in all cases, as a rule, when the pelvis is narrowed from side to side, and it is well that it should be so, for then the long back and front measurement of the head does not fall into the shortened cross diameter of the pelvis, but rather into the axis. The opposite position—forehead presentation—with this form of pelvis may be very destructive. As the contraction persists through the whole length of the pelvic canal, the expulsion of the child is a difficult matter to the very end. On this account the scalp tumour attains a considerable size, and the maternal genital passages not unfrequently swell during the labour.

Neither, in the majority of cases, does the simple flattened pelvis, other things being favourable, offer any unconquerable resistance to the passage of the child. The head generally lies across, and the forehead lower down than usual, the greater fontanelle more towards the middle of the pelvis, and easier to reach than the lesser, because the head is narrower near the coronal suture than at the prominent parts or tuberosities of the side-bones, as of course the narrow part will enter the shortened back and front diameter of the pelvis more easily and quickly than the broad. In the meantime there is plenty of room in the cross diameter of the pelvis for the back and front diameter of the head. The sagittal suture runs across farther back, and nearer the promontory than usual, as the

parietal prominence that lies farthest behind is held back above it, whilst the fore-lying prominence is felt behind the symphysis. The nearer the sagittal suture lies to the promontory, the greater is the want of proportion between pelvis and head. The head, driven down by strong pains, enters the pelvis in the following manner: the parietal bone that lies forward rests firmly against the horizontal branch of the pubes; the one behind presses forwards into the sagittal suture, and gets pushed under the bone in front, and thus gradually is pressed down on to the promontory (rotation of the head on its long back and front axis—see § 90); then, the sagittal suture still pointing across, the greater fontanelle begins gradually to rise up against the side of the pelvis, and the head descends on the opposite side (rotation of the head on its short—side-to-side—axis), until slowly or more quickly the head advances through the pelvic inlet, whereupon the back of the head turns forwards, and now the labour ends in the usual way, often with surprising quickness, if the pains keep up, and the lower part of the pelvis is roomy and of ordinary depth. The laboured entrance of the head into the pelvis is generally the cause of a scalp tumour being formed, which often reaches far down into the pelvis, and makes the labour seem more advanced than it really is. The midwife may recognise the actual advance of the head by the sagittal suture gradually getting farther and farther away from the promontory, and nearer to the middle line, and by the fact that at first she can reach the promontory with the extended finger, then only with the finger curved and at last not at all, the hollow of the sacrum getting more and more filled up by the descending head.

Much greater difficulties arise in universally contracted flat pelvis. The contraction here is not unfrequently so great, that when other conditions are more favourable, a full-grown child cannot pass through the pelvis except piecemeal. In head presentations, the head generally remains a long time movable above the

brim, and as the patient turns to one side or the other, so the greater or lesser fontanelle sinks the lower. Where the force of the pains succeeds in overcoming the difficulty, the actual entrance of the head into the pelvis almost always takes place with the back of the head in advance, as in universally contracted pelvis; whilst, as in simple flat pelvis, the parietal bone that lies behind is held back above the promontory, and the sagittal suture runs across just in front of it.

§ 249.

In contracted pelvis, the midwife should proceed as follows:—

Any pregnant woman whom she knows to have a contracted pelvis she should earnestly persuade to allow herself to be examined by a medical man *soon after the first half of the pregnancy* has passed, so that the medical attendant may in advance take measures to ease the labour, and, if it be considered necessary, bring it on prematurely.

In labour, a medical man must be called in as soon as the midwife has discovered that the pelvis is contracted; also in those cases where she only suspects a narrow pelvis, where, however, the period of expulsion is dragging its slow length along, when the head does not advance, and a firm scalp tumour forms, she must cause a medical man to be called in. Of course she will do so if the presentation be irregular, or if any accident happen.

Until his arrival, the midwife must take special care to keep the membranes unruptured, especially if the presentation be irregular. In such a case as this, however, even if the presentation be regular, a premature rupture of the membranes is a thing to be feared, as has already been mentioned; for the head being so high up, the waters escape more completely than usual, and the lower segment of the womb is then subjected to greater and less uniform pressure between head and pelvis than is desirable. The midwife must therefore

let her patient lie down at once ; she herself must make her internal examinations with great caution, forbid all straining and bearing-down, and generally speaking all careless movements, such as tossing about in bed, etc. On account of pendulousness of the belly, it will be generally necessary to apply a binder. For the rest, every care must be taken for the comfort of the patient. It is not necessary that she should lie all the time on her back ; she may be carefully placed on her side, and if the belly falls over too far, it should be supported by a pillow. With all this, the midwife must observe what position seems to be the best for the head as regards entering the pelvis, and for the pains, and in what the pain is most endurable.

She must pay particular attention to the bladder, seeing that her patient empties it often, and feeling from time to time whether it is full or not. If it should be full, and the patient cannot empty it herself, the urine should be carefully drawn off with the catheter.

Even in the period of expulsion, so long as the head has not fully entered the pelvis, she must admonish the patient to bear down but moderately during the pains, and *not at all between them*, although there is often a strong inclination thereto. It would be very dangerous to make the patient bear down with great force at this period.

Further, the midwife must listen frequently for the sounds of the child's heart, and observe whether they are growing slower and weaker, and also see whether any *meconium* is expelled.

If the genital parts are much swollen and dry, cloths soaked in some soothing and softening application (such as weak linseed-tea) should be frequently applied.

CHAPTER VI.

SOME DEFECTS OF THE VAGINA AND EXTERNAL GENITALS.

1. *Contraction and Closure of the Vagina—Narrowness of the Vulva.*

§ 250.

Sometimes the vagina is so narrow, near the entrance or higher up, that it will not admit the tip of the finger; or it is divided completely into two parts by a membranous or fleshy dividing wall running from side to side, the wall being provided with an opening; or the entrance is barred by the uninjured hymen; or the walls are grown together, the result of some bygone inflammation. In all these cases, the midwife must procure the early attendance of a medical man, as the powers of nature are but rarely able to overcome the difficulty of themselves, whilst the woman suffers agonizing pain, and dangerous rents are very liable to be made. Ruptures of the vagina, which may extend even into the bladder or rectum, are usually attended by bleedings of some importance.

The exit of the child may be much prolonged by irregular narrowness of the vulva, when its folds are short and but slightly distensible. In such a case the midwife must not delay too long in calling in a medical man, even if the presentation be regular, for not only is the mother too much exhausted by the long duration of the labour, but the child is in danger of losing its life, partly on account of the violent pressure to which the advancing head is subjected, and partly because the disturbing influence of the pains in delayed labour is felt more and more as the labour approaches the end, and as the womb empties itself (see § 86).

2. *Falling of the Vagina.*

§ 251.

In falling of the vagina, just as in falling of the

womb, the labouring woman must lie flat, and avoid much straining or bearing-down during the pains. If the fallen part is pressed out of the vulva by the child's head, the midwife must try to replace it with the finger, well oiled, and if possible push it back above the head. If the birth be delayed, however, and the expelled part begin to swell, the midwife must seek the aid of a medical man.

3. *Hæmorrhage from Rents of the Vagina.—Blood Tumours of the Vagina and External Genitals.*

§ 252.

Besides the ruptures of the vagina mentioned in § 250, other surface rents or tears occur not unfrequently in vaginas of ordinary characters otherwise. They arise in consequence of the distension and pulling the vagina has to undergo during the passage of the head of the child. They bleed but little, give rise to no trouble, and heal quickly. If the rent is deeper, however, the bleeding from the wounded vessels is generally pretty free. In rare cases, the bleeding depends on the *bursting of a knot of varicose veins*. Generally the bleeding has its seat in the middle or lower portion of the vagina, and often at the entrance of it. The midwife must pay particular attention to the region between the clitoris and the opening of the urethra, as even superficial tears may give rise to very free hæmorrhage.

A knot of varicose veins in the vagina, or on the external genitals, may burst during pregnancy,—for example, from severe straining. The other injuries generally take place during labour, during the period of expulsion, sometimes not till the last moment, so that the bleeding is not noticed till after the child is born.

The midwife should suspect that one of these injuries is the cause of the hæmorrhage: when it comes on suddenly in greater or less quantities; when there are no signs of hæmorrhage from the womb; when the

placenta has had a proper place of attachment ; when the presenting part of the child has closed up the mouth of the womb during labour ; and when, after labour, the uterine contraction has been firm, and the placenta has not had an irregular seat, and the womb is well contracted.

§ 253.

As these hæmorrhages are very dangerous, capable of destroying life in a short time, the midwife must strive to be useful herself, for the medical man—whom she must send for in every case—will generally arrive too late. She must immediately examine to see where the bleeding is from. If the injury is on the external genitals, or in the entrance of the vagina, after wiping the parts with a towel dipped in cold water, she will see the spot the blood springs from, or even the opening itself out of which the blood is pouring. *Upon this spot she must place her finger, pressing with sufficient firmness to stop the bleeding.* She must keep up this pressure until the blood no longer flows when the finger is removed, or, if the labour is not over, until the advancing head stops it. If the pressure has to be kept up a long time, a pad of linen soaked in vinegar and water should be put underneath the finger. If the injury is situated so high up that it cannot be seen, she must attempt to find the spot with her finger, pressing upon the bone in all directions until she finds a spot by pressing upon which the bleeding ceases ; here she must allow her hand to lie quietly until the hæmorrhage at last ceases.

If the midwife does not succeed in finding the bleeding point, she must try to master the bleeding by injecting hot or cold water with a little vinegar added or by passing pieces of ice into the vagina. If these methods do not suffice, nothing remains for her but to plug the vagina, as she was taught in hæmorrhages during pregnancy. If the labour is already ended, she must watch the patient's abdomen, so as to see at

once if, the bleeding continuing, a large quantity of blood collects in the vaginal cavity, or in the neck of the womb, and forces the contracted womb upwards, or if the womb relaxes, and its cavity becomes distended with blood. In both cases she must remove the plugging at once (*see §§ 338 and 342*).

§ 254.

Sometimes during labour a vein bursts in the vagina, but the skin above it remains uninjured; or the opening is blocked and stopped up by the presenting part of the child, the blood continuing to flow all the time, however. Then the blood that is poured out collects by the side of the injury, between the vagina and the wall of the pelvis, and from here descends to the external parts; *a tumour forms rapidly in one of the folds of the vulva, accompanied by violent pain; it grows quickly, and soon assumes a bluish, even a black-blue, colour.* Such a tumour can show itself before the birth of the child, but generally it first appears in the after-birth period, or somewhat later. The patient complains of a violent pain and pressure in the sacrum and pelvis, for the tumour generally reaches up into the vagina a greater or lesser distance. In this case a medical man must be called in quickly, and until his arrival the parts should be covered with cold-water cloths and protected from pressure. If the tumour reaches very high up in the vagina, irrigation with hot water and the introduction of ice are the best means of stopping the bleeding and hindering the growth of the tumour.

4. *Venereal Discharges from the Vagina.—Venereal Ulcers in the Vagina and on the External Genitals.*

§ 255.

By the *venereal disease* is meant a very bad contagious disease, springing mostly from the genital organs, and which the midwife should become ac-

quainted with lest she should unfortunately catch the disease, or convey it herself to others.

It generally shows itself first as an abundant irritating mattery discharge from the vagina, or as small ulcers on the inner surface of the folds of the vulva, or as warty growth in these and neighbouring parts (venereal warts). If the disease persists long, the glands of the groin often swell, inflame, and burst, leaving obstinate ulcers; an eruption breaks out, which spreads over the whole body; the throat and nose are attacked; the voice becomes in consequence hoarse and whispering; the nose at first is stopped up, and at last falls in, etc.

§ 256.

If in an exceptional case the disease has already advanced so far, the midwife will generally be made aware of its existence in other ways. Usually she will find the disease limited to the genital organs and neighbouring parts, so that she will find out its existence by her own observations. To guard against poisoning herself, she should never make an examination with a sore on the examining finger. Even slight pricks and scratches are very dangerous. She should always examine her hands before making an examination, and if there is any sore, it should be covered with sticking-plaster, or painted over with collodion, which quickly forms a skin-like covering over the sore. She should never omit to oil the finger well before examining. If she should not be aware that she has a sore on the finger until after the examination has been made, and then discovers one, she should wash her hands at once and thoroughly, and straightway consult a medical man. If an ulcer should make its appearance on her hands or fingers, she should see a medical man at once, although she may never have touched a woman suspected of being contaminated, and she should neither examine nor attend during confinement any patient until the ulcer has healed up.

In all cases in which the midwife believes she has detected the disease in any pregnant woman or woman in labour, she should warn her of the urgent need of consulting a medical man.

During labour and in childbed, she must make special endeavours to protect the child from contagion, as, although frequently, it is not always infected within the womb. She must wash out the maternal genital passages carefully with lukewarm water, and oil the ulcers well before the child passes over them. The new-born infant must be washed and cleansed with more than ordinary care, and in particular double strictness should be exercised in protecting the infant's eyes, according to the rules laid down. (*See* §§ 113, 117, 144.)

If an eruption or ulcer break out on the child, a medical man should be consulted at once.

CHAPTER VII.

PUERPERAL CONVULSIONS DURING LABOUR.

§ 257.

General convulsions, or *eclampsia*, are among the most dangerous accidents that can threaten the life of a pregnant woman. They occur most frequently during labour, and in every period of it, frequently also towards the end of pregnancy, when they are generally the forerunners of premature labour; sometimes they do not come on until the after-birth period, or even later in childbed. Convulsions are to be feared if, in addition to the legs, the hands and face swell towards the end of pregnancy (*see* § 190).

Generally, but not always, premonitory symptoms are observed before the convulsions come on: headache, glimmering or dimness before the eyes; or all objects seem coloured—red, yellow, etc.; more rarely there are noises in the ears; frequently there is

nausea, weight over the pit of the stomach, or vomiting; occasionally repeated shiverings during the pains are observed, or extraordinary tenderness on examining internally.

The attack itself generally comes on with a pain; the look becomes fixed, the features are distorted, the head twists to one side, the tongue is thrust forwards—caught between the teeth, and bitten sometimes almost to pieces; the whole body falls into violent jerking movements; the face becomes red, blue, and puffed-up withal; the patient froths at the mouth, and the throat rattles. After a few minutes the jerkings abate, and the body becomes quieter; the patient lies unconscious, and snoring, as if in a deep sleep.

The attacks are repeated after longer or shorter intervals. If the attacks are not violent, and the intervals between them long, consciousness at first returns to a certain extent between them. The more violent the attacks are, however, and the quicker they follow one another, the more quickly is consciousness lost, and the greater the danger to the patient. Sometimes the patient falls into unconsciousness immediately after the premonitory symptoms have shown themselves, without any actual convulsion going before the loss of consciousness. Under these circumstances the labour usually progresses but slowly; indeed, the patient may even die undelivered. In rare cases the labour follows its usual course between the attacks, more frequently after the attacks have ceased and whilst the patient is lying unconscious. The child is usually stillborn. The attacks frequently continue after the labour is over.

§ 258.

The midwife should cause a medical man to be sent for immediately she becomes aware of the convulsions, or even of their precursors. She herself must, first of all, see about a supply of fresh air in the room, and then apply cold wet cloths to the head. She must go to

work carefully, however, and whilst she is doing these things bear in mind the possibility of a fresh attack. During the attack she must prevent the patient from doing harm to herself, such as falling out of bed, biting her tongue, etc. To prevent this, the tongue should be pushed back as soon as it is thrust out, and a spoon handle, well wrapped round with calico, placed between the teeth. On the other hand, extension of the thumb (always turned inwards in these cases), as well as the holding of the limbs fast, is useless, or even harmful. If the patient can drink, the midwife should give her some cold acid drink, such as water with a little vinegar or lemon-juice in it. When, after the labour is over, the patient becomes conscious again, she has no recollection of what is past, and does not know she has given birth to a child. The midwife must bear this in mind, and be careful what she says and does before her; she must also warn the people about the patient to be careful.

§ 259.

The convulsions just described resemble those of epilepsy in every respect. Women who suffer from this disease are sometimes attacked by it in pregnancy or during labour. Usually there is only one attack, or at most only a few, wherefore the danger is less than in the other kind of convulsions; yet an attack may be fatal from its severity. In such a case, the midwife must act precisely as instructed in the preceding paragraph.

§ 260.

The so-called hysterical convulsions, which sometimes come on in those who are disposed to them (more frequently in pregnancy, however, than during labour), are distinguished from those already described principally by the fact that in them consciousness is never completely lost; it is at most momentarily deranged. The face is pale during an attack, but little

altered; the movements of the limbs are rather striking and throwing than jerking; breathing is more regular; the patient often cries out, or grinds the teeth; sometimes the attack ends with the expulsion of a quantity of wind, or in a paroxysm of weeping. Although these convulsions are not very dangerous, the midwife will do well to call in a medical man. Until he comes, she should see that there is a supply of fresh air, and try to prevent the patient hurting herself. An aperient enema, a cup of camomile-tea, or something of that kind, in the intervals, will generally bring some relief. In the period of expulsion, the convulsions generally cease of themselves.

§ 261.

Far different are those convulsive movements that come on after excessive losses of blood, and which generally announce the near approach of death. These have been already spoken of (§ 169).

II. IRREGULAR LABOUR DEPENDING ON THE CHILD AND OTHER PARTS OF THE OVUM.

(a) *Irregular Labour depending on the Child.*

CHAPTER I.

IRREGULAR PRESENTATION.

§ 262.

All presentations except those already described as the usual ones are said to be *irregular*.

These latter include—

(1) Presentations that are regular, in that the head is the most advanced part of the child, but in which it is turned in an unusual direction whilst above the pelvis, or gets into one in passing through (irregular head presentations—see § 90).

(2) Face presentations.

(3) Pelvic presentations (breech, foot, or knee presentations).

(4) Presentations in which a limb enters the pelvis along with the head.

(5) Presentations in which the child does not lie lengthwise in the womb, but across—either directly or in a slanting direction—so that neither head, breech, nor lower limbs present, but some other part of the trunk, most frequently the shoulder (cross births).

§ 263.

Of all the irregular presentations, the most favourable are those in which the child passes through the genital passages lengthwise,—that is, with the head, breech, or lower limbs in advance. When the presentation is one of these kinds, labour may be completed by the natural powers, without harm to either mother or child. The child may enter the pelvis, however, with the head, as well as the face, pointing in such a direction that, without a change of it, a natural ending of the labour is impossible, or at least very dangerous to mother and child. It is always an unfavourable circumstance when a limb of the child enters the pelvis at the same time as the head; in such a case artificial aid is generally necessary. The most unfavourable of all are cross births, as a full-grown living child cannot be born without artificial aid when the presentation is of this kind.

1. *Irregular Head Presentations.*

(a) Irregular Position of the Head.

§ 264.

At the time the head enters the pelvis, it lies nearly straight across, as a rule,—that is, the sagittal suture runs along the cross or transverse diameter of the pelvic inlet (*see* § 92). Sometimes it enters with the

sagittal suture in the oblique diameter, but this is more rare. This direction of the suture is unfavourable only in cases of flat pelvis.

It is decidedly irregular if the entrance takes place with the suture pointing backwards and forwards; and it very rarely does so. If the direct diameter of the pelvis be not unusually large (as it may be in humpbacked women), the entrance of the head whilst pointing in this direction is of necessity very difficult, and generally speaking impossible, until the back of the head sinks down, so that the direct diameter of the head inclines more to that of the middle line of the pelvis. The midwife can do nothing to remedy this irregularity. If the labour does not advance, a medical man must be called in.

§ 265.

Sometimes the rotation of the head on its perpendicular axis that takes place in the pelvic cavity is delayed, or but incompletely accomplished; indeed, the head may maintain its cross direction (the child's face looking to the mother's side), even down to the pelvic outlet. Weakness of the pains, or a contracted direct diameter of the pelvis, or the descent of an arm along with the head, may be the cause of this irregularity. With strong pains the rotation generally takes place at last. In rarer cases, the head emerges in this cross direction, whereby the perinæum is endangered more than usual. Often the labour comes to a complete standstill.

The midwife should try to help forward the proper rotation by placing the patient on the side towards which the back of the child's head is directed. If the labour is very much delayed, she must let a medical man be called in.

§ 266.

In other cases it happens that *the back of the head turns completely backwards into the hollow of the sacrum*

when it has been already slightly directed that way at the inlet, principally in the second head position. The greater fontanelle being directed somewhat forwards, the lower it lies, in comparison with the smaller, the more easily this irregular rotation takes place. The forehead, however, cannot advance so easily under the symphysis as the back of the head does, but is blocked up behind it. The great fontanelle appears first in the genital fissure, then the top of the head, and at last the back of the head over the perinæum; then, the back of the head retreating a little, the face comes into view from under the pubic arch. Unless the head is small and yielding, and the pelvis very roomy, the child cannot be born with the face pointing in this direction without great difficulty. As the head does not emerge through the vulva in its small oblique diameter, but in its direct (*see* § 111), the perinæum is exposed to greater pressure, and consequently to the danger of being torn. The scalp tumour generally covers the great fontanelle, and the adjoining margins of the bones of the vault of the skull and forehead.

In this case, also, the midwife must see if placing the patient on the side whither the back of the head is directed will not bring this part lower, and thereby assist its rotation forwards. If this fails, as the head passes over the perinæum she must support it with particular care. If there be any great delay in the labour, the assistance of a medical man will be necessary.

(b) Faulty Inclination or Dip of the Head.

§ 267.

If, when the head enters or passes through the pelvis, either the back of the head or the forehead or either side be unusually low down, its inclination, or "dip," may be said to be irregular. At the same time the form of the pelvis must be borne in mind; for if the form of the pelvis be a departure from the usual, the inclina-

tion of the head, although it also may be a departure from the usual, may yet be the fittest for this particular shape of the pelvis, and be, in fact, the regular inclination for this kind of pelvis. (*See* § 248.)

Descent of the back of the head, in which the small fontanelle is found near the middle line of the pelvis, and which is perfectly regular in all shapes of the pelvis towards the outlet, is irregular at the inlet in the wide as well as in the simple flat pelvis. In the universally contracted pelvis, on the other hand, and in all pelvises contracted from side to side, this dipping-down of the back of the head is regular, and dependent on the shape of the pelvis. If the pelvis is wide, there is no particular disadvantage in the premature dip of the back of the head, but it is unfavourable in the simple flat pelvis. It is caused, as a rule, in both cases by the whole womb being inclined to the side towards which the back of the head is directed. (*See* § 222.)

Descent of the forehead, in which, on the contrary, the great fontanelle is found near to the middle line, is only regular in the simple flat pelvis, and here only at the inlet, and is an irregularity if met with in wide as well as in a universally contracted pelvis. In wide pelvises, this lowness of the great fontanelle may be followed by an irregular rotation of the head in the pelvic cavity. (*See* § 266.) In universally contracted pelvis, this dip of the head renders the entrance into the pelvis very difficult, even impossible. Here also an inclination of the womb is usually the cause, but in this case the inclination is to the side towards which the forehead points.

When the midwife meets with a case, then, in which the back or front of the head is below the level of the other part, she must strive to answer the question, "Is this departure from the rule dependent on the particular form of the pelvis, and therefore the most proper under the circumstances? or is it caused by obliquity of the womb?" In the first case, she must

the more abstain from interference, as, without this, the need of medical assistance is indicated by the narrowness of the pelvis. In the second case, laying the patient on the proper side, if done at the proper time, will almost always improve the inclination of the head. (*See* § 223.)

Brow Presentations will be spoken of among Face Presentations.

§ 268.

The midwife will recognise the second kind of irregular inclination—that in which the one or other parietal protuberance is lower than the other—by the sagittal suture running unusually near to either the promontory or the upper edge of the pubes.

The first kind, that in which the suture runs too close to the promontory, occurs more frequently than the second. The cause mostly lies in a narrowing of the direct diameter of the pelvis, in consequence of which the parietal bone that lies behind is held back above the promontory (*see* § 248). Medical aid is absolutely necessary here. But sometimes the pelvis is of ordinary width, yet the parietal bone lying to the front is sunk so far down that the ear of the child can be felt in the mouth of the womb, lying behind the symphysis. If the pains are good, this inclination of the head is usually overcome, as the labour progresses, without artificial aid. If this should not be the case, a medical man must be called in.

§ 269.

It is much more serious when the parietal bone that lies nearest the promontory is in advance, above, or within the pelvis. This sometimes happens when, in consequence of pendulous belly, the head is sunk too far forwards over the pubes. The head may present in this way, however, when there is no pendulous belly. It is more frequently met with in narrow than in wide pelvis. The midwife will only be able to feel

the head externally jutting above the pubes so long as it remains with both its sides above the inlet. When, however, the side lying behind sinks down into the pelvis, its inclination alters at the same time,—the forward-lying side is pushed up against the shoulder, and draws itself out of reach; that is, it cannot be distinguished from the outside. The state of affairs can now only be discovered from the inside. The midwife feels the suture running close behind the symphysis, and if she carries the finger backwards to the prominence of the backward-lying parietal bone, she can sometimes even reach an ear. With this faulty inclination, and in this position, the head cannot be moved any farther. But improvement in these cases by the natural powers can only be hoped for, if the pelvis is wide and the pains are good, by the forward-lying parietal bone being gradually pressed down behind the symphysis, whilst the other is at the same time raised up behind. But if the pains are weak, and the pelvis decidedly narrowed in its direct diameter, the head will retain its faulty inclination, without any advance, and the labour will come to a standstill.

The midwife can often prevent the head getting into this faulty position, and even rectify it soon after it has done so, by strictly following the instructions given for the treatment of pendulous belly. The patient, however, must abstain from any voluntary bearing-down during the pains. It is the more important for the midwife to find out the faulty position of the head above the pelvis early as, later on, the greater the fault is, the larger will be the scalp tumour, and the more difficult it will be for either her or the medical man to discover the irregularity.

2. *Face Presentations.*

§ 270.

In face presentations, the head of the child is indeed the part in advance, but the inclination is entirely

different from what it is in vertex presentations (those in which the top of the head presents). The chin is pushed away from the breast, the back of the head is

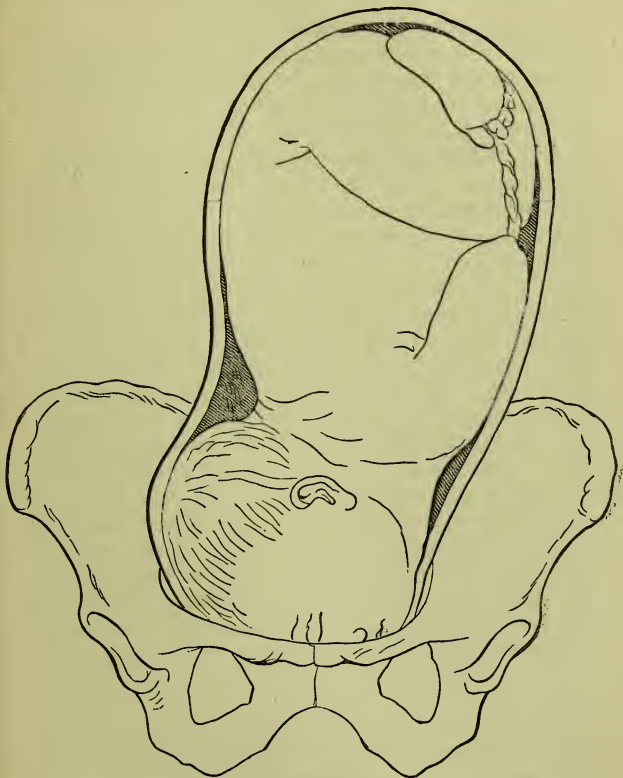


Fig. 7.—Face Presentation.

pressed back against the neck, the spine is bent backwards, and the chest thrust out in front. This irregular presentation generally comes on first through pressure of the pains, when the head is so far removed

from the pelvic inlet on the side towards which the back of the head points, that the interior part of the vertex, or top of the head, rests upon the side brim of the pelvis.

As in vertex presentations, two kinds are distinguished. In the first (which is supposed to have its origin in the first vertex presentation), the forehead is directed towards the mother's left side; whilst in the second it is directed to the right.

A particular case may be suspected to be one of face presentation when the external examination reveals the bulging vault of the skull, in one or other side, above the pelvic inlet, and on the same side, in the base of the womb, the breech of the child is felt, the two prominences being separated by a furrow, whilst the child's movements are felt principally on the opposite side, where along with the limbs a larger portion of the trunk is felt (the breast), and where also the sounds of the child's heart are heard. In the early stage of labour, whilst the head is still high up, and particularly if the bladder of waters is strongly distended, the midwife will scarcely be able to ascertain exactly what part presents, or at most will only be able to decide that it is not the vertex. After the membranes are ruptured, however, the decision is not generally difficult. She distinguishes the brow by the suture, the nose by the hard bridge and the two nostrils, the eye by the little round balls behind the slit of the lids, the mouth by the hard gums and the tongue.

§ 271.

The face generally enters the pelvis with the forehead in advance, which is either directed straight towards the side or turned a little forwards. Later on the chin gradually sinks deeper, and turns more towards the front, whilst brow and vertex glide into the hollow of the sacrum. The parts that come into view first are the cheek and corner of the mouth of that side of the face that is in front; the chin is driven

forwards under the pubic arch as far as the angle of the lower jaw, and whilst it sticks here, first the brow, then the top of the head and back of the head, glide forwards over the perinæum.

The trunk is expelled in the same way as in vertex presentations, only in them the surfaces of the breast and belly of the child are usually turned more towards the front.

The face is generally disfigured by a bluish—it may even be a blackish—swelling, which forms on the side that has been in advance. The mouth is drawn to the opposite side. These appearances soon vanish of themselves.

§ 272.

Face presentations are rare. They are generally more unfavourable than vertex ones. The face unfolds the neck of the womb less equably, and fills the lower segment of the womb less completely, than the crown, for which reason the bladder of waters often forms irregularly, and is easily ruptured before the time. The head is expelled with more difficulty, for the reason that the broader lower jaw cannot sit so closely to the pubic arch as the back of the head can. Therefore the perinæum is in greater danger, and the child suffers not only from the delay, but from the pressure to which the neck, strongly arched backwards, is of necessity subjected. If the pains are good, however, and the maternal passages roomy, these face labours generally run a course favourable to both mother and child, although a little more tedious than crown labours.

In a case of face presentation, it is very unfavourable if the rotation of the chin forwards fails to take place, or if it turns decidedly backwards. As a rule, labour in this position is not possible; and if it should be accomplished by exceptionally powerful pains, there is great bruising of the maternal passages, and the life of the child is in great danger.

§ 273.

The midwife should let a medical man be called in as soon as she has discovered that a case is one of face presentation, or as soon as she has convinced herself that it is not the crown that presents. His presence is particularly necessary when it is the first child, or if the pelvis is narrow, or if the necessary rotation of the chin forward fails to take place, and, generally, if from any cause the period of expulsion lengthens itself out.

For the rest, the midwife, as long as she is without medical assistance, besides observing those rules that are generally adequate, must bear in mind the following. If the head is still high, before the membranes are ruptured, she should attempt to bring about a crown presentation by placing the patient on the side towards which the back of the head is inclined. If the face presentation persists, she must do all she can to preserve the membranes entire until complete dilatation of the mouth of the womb has taken place (*see* § 249). After the rupture of the membranes, she must be very cautious in making her examination, and bear in mind that the delicate parts of the face, and especially the eyes, may easily get injured. If the face has descended into the pelvis, she must do what she can to bring about the descent of the chin, and its rotation forwards, by placing the patient on that side towards which the chin is turned. In supporting the perinæum, she must neither press too early nor too strongly, lest the child's chin be forced too much against the symphysis, and the labour be delayed.

She must not show the child to its mother, its face being often distorted by the tumour, until she has prepared her by telling her of it, and assured her of its complete harmlessness.

§ 274.

Brow presentations, which stand midway between those of the crown and face, are worse than face pre-

sentations. So long as the brow remains above the inlet, it may be hoped that by laying the patient on the proper side the brow presentation may change to one of the crown or face. When the brow is forced down into the pelvis, however, after the escape of the waters, this change no longer takes place without artificial aid, and the difficulties of labour are immensely increased.

The expulsion of the head in these presentations generally takes place in the following manner. The brow, at first directed to the side, turns towards the front, and the crown towards the back; in the vulva the upper part of the face—brow, eyes, and nose—appears; and whilst the upper jaw is blocked against the pubic arch, the crown and back of the head are pushed over the perinæum, whereupon at last—the back of the head sinking back again—the upper jaw, mouth, and chin advance under the pubic arch. If the head retains its crosswise position as far as the pelvic outlet, however, the face is driven forwards until the lower jaw reaches one limb of the pubes, and then the back of the head the other, and at last the lower jaw emerges.

The birth or scalp tumour occupies the whole brow, from the root of the nose to the edge of the great fontanelle.

Medical aid is absolutely necessary in this presentation.

3. *Pelvic Presentations.*

BREECH, FOOT, AND KNEE PRESENTATIONS.

§ 275.

In pelvic presentations, the womb from the outside seems of a regular egg-shape. Sometimes the head of the child can be plainly distinguished on one side, in the base of the womb, as a large, round, hard, and movable part, and from it the trunk can be followed downwards. The sounds of the child's heart are heard above the navel, on that side towards which the back

is turned. The movements of the child are felt by the mother herself lower down.

Pelvic presentations are divided into breech, foot, and knee presentations.

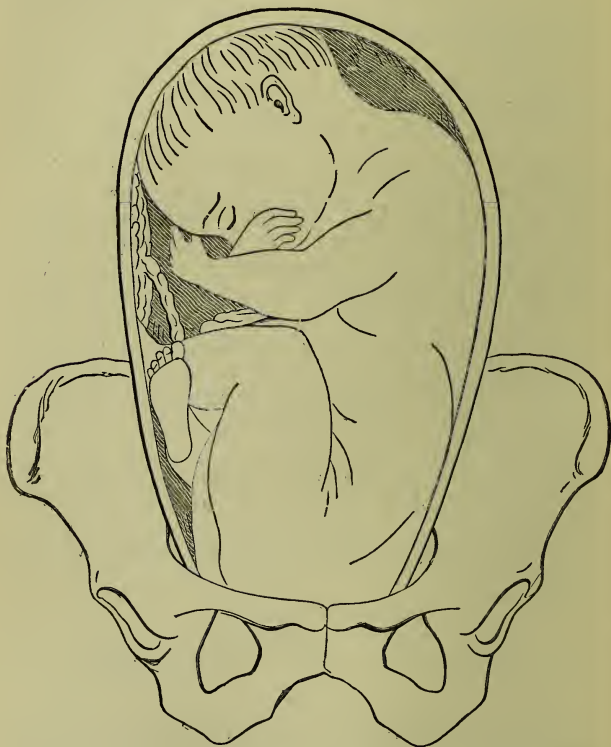


Fig. 8.—Pelvic Presentation.

§ 276.

In breech presentations the attitude of the child is usually as follows: the thighs are drawn up to the body; the feet lie near the genital parts.

At the end of pregnancy, or beginning of labour, the breech is still, as a rule, above the pelvic inlet. The midwife feels, through the vaginal vault, a large, round part of the child, mostly soft, and hard only in places, and not very movable. As a rule, the breech is only identified with certainty after the rupture of the membranes. The points of identification to which the midwife must pay special attention are—the movable coccyx, the opening of the seat, the parts of generation, the tuberosity of the ischium that lies in front; sometimes more of the back surface of the breech lies above the inlet, sometimes more of the abdominal surface, sometimes more of the lateral surfaces. In the latter case, the midwife will be able to reach the front part of the crest of the ilium and the bend of the thigh. Sometimes, at the commencement, the heels can be felt near the buttocks. As the breech descends farther down into the pelvis, the child's excrement usually comes away in considerable quantity.

§ 277.

Two varieties of breech presentation are distinguished. In the first, the back of the child is turned towards the mother's left side; in the second, towards her right. In both cases the breech generally enters the pelvis obliquely.

In the first variety, then, the child's back looks towards the left, and either a little forwards or backwards. It almost always turns forwards, however, as it advances into the pelvis, even although it may have looked rather backwards at the commencement. The hips lie then in the second oblique diameter, the left one, facing the anterior pelvic wall, usually the lower. Whilst this is now advancing from the right under the pubic arch, and here getting blocked up, the other is driven from the opposite side over the perinæum. It is but rarely that the feet, which are pressed up against the breech, emerge through the vulva at the same time (double or mixed breech labour); as a rule, they remain

behind, the legs being pressed up against the belly (simple breech labour). The breast and shoulder now pass through the pelvis in the same oblique diameter as did the hips. The arms, which lie in their natural position across the breast, are born at the same time, the feet get free, and the legs fall down from the abdomen. After the birth of the shoulders, the midwife generally finds the head already in the pelvis, its chin in advance, and the face turned to the right ischiatic notch; and whilst the back of the head is blocked against the left branch of the pubes, chin and face come into view over the perinæum, and the crown immediately follows. A dark bluish-coloured swelling, which generally stretches away into the genital parts, appears on the pioneer left buttock. This corresponds to the scalp tumour of vertex presentations.

In the second variety everything is the other way about: the child's back looks to the mother's right; the right hip, leading the way, advances from the left under the pubic arch, the left from the right over the perinæum; breast and shoulder pass through the pelvis in the first oblique diameter, whereupon the head enters the pelvis with its direct diameter in the second oblique diameter of the pelvis. The birth tumour is situated on the right buttock.

§ 278.

Slight deviations from the usual course of breech presentations are not unfrequent; for example, an over-rotation of the trunk in its passage through the pelvis—so that in the first breech position the back turns from front and left to front and right, and in the second from front and right to front and left.

On the other hand, it very rarely happens, in the natural course of labour, that the child's back turns forwards when it has faced backwards at first, or that it turns from front to back during its passage through the pelvis. This deviation is very unfortunate; for as the space behind the pubes is narrowed, the arms do

not descend with the breast, but find their way up by the side of the head, and are then very difficult to get free. The chin also is removed to a distance from the chest, and remains above or behind the pubes. Sometimes the next pains bring about a further rotation: the face turns more to the side, and the head then enters the pelvis with the chin in advance; or the back of the head enters first, pressed against the neck, whilst the vertex glides into the hollow of the sacrum. The back of the head is then the first to appear in the vulva, and over the perinæum come vertex and forehead, and last of all the face. In exceptional cases the pains drive the face down behind the symphysis as far as the forehead, whereupon the back of the head and the vertex emerge over the perinæum.

§ 279.

In foot presentations, either both feet or only one foot has glided down from the breech, which lies somewhat to one side on the brim of the pelvis. The one is called a complete, the other an incomplete foot, or half-breech presentation. Before the rupture of the membranes, the recognition of a footling case is often rendered somewhat difficult, from the tenseness of the protruding membranes and the rapid movements of the feet. After the rupture of the membranes, however, there is no difficulty: the midwife is able to distinguish the foot from the hand by the heel, the flat sole of the foot, and the toes, which are shorter than the fingers.

It is rarely that one or both knees descend. The knee is distinguished from the elbow, for which it is most likely to be mistaken, by its greater breadth and roundness.

In foot and knee presentations, the child passes through the pelvis as in a breech case when once the hips have entered. The position of the feet within the pelvis varies, and the direction of the heel does not always correspond to that of the back of the child. If

both feet are down, they may either lie side by side, or cross each other. The course of the incomplete footling case is most like that of the breech, in which the fuller hip, *i.e.*, the one which has its thigh still upwards, turns gradually round to the back, even when it has been in front at the beginning, for the reason that it is only in the hollow of the sacrum that it can find room for itself.

§ 280.

As far as the mother is concerned, breech and footling labours are not more unfavourable than vertex labours.

But, on the other hand, the life of the child is in the greater jeopardy, as a trifling delay even, after the breech is born, may be fatal. For then not only is the arrival of bright red blood hindered by the pressure on the blood-vessels from the greatly diminished size of the womb, and by the separation of a large portion of the placenta (*see* § 86), but the communication between mother and child is interrupted by the navel cord being more or less squeezed between the pelvic wall and the chest and head of the child. A delay is the more to be feared as the largest and hardest part of the child, the head, comes last. In respect of this, complete foot or knee cases are the most unfavourable, for the feet open out the neck of the womb less completely than the larger-circled breech; the membranes generally protrude, sausage-shaped, deep into the vagina, and frequently give way before the mouth of the womb is properly dilated; the waters escape in great quantities by the sides of the legs, and the navel cord may be easily washed down along with them, or forced down by the succeeding pains, not being kept back, as in breech labours, by the thighs lying against the belly; finally, when the feet come down, the thinner hips do not dilate the passages on their way through as fully as the breech generally does; for this reason, the arms and chin may easily get held back above; besides all

this, the pains are not generally excited to such strength as in breech cases, as the maternal passages are less distended, and thus, towards the end of the labour, when an accelerated progress is most desirable, a serious delay occurs. Incomplete foot cases run a course more favourable to the child, inasmuch as they more closely resemble breech labours.

§ 281.

In all cases of pelvic presentation, when all the other conditions are favourable even, the midwife ought to insist on a medical man being called in, that he may be at hand in case of need; *for the child's life often depends on prompt artificial aid, which the midwife is not everywhere capable of rendering with certainty.* It is only when, notwithstanding all her efforts, medical assistance is not procurable, that she herself may, and must under certain circumstances, strive to help, in accordance with the rules which will be given later on. For the rest, until the arrival of the medical man she must proceed as follows.

As in face presentations, she must endeavour to preserve the membranes unruptured until the neck of the womb is unfolded, and the external mouth is fully dilated (*see* § 249). This takes place most readily when the breech is in advance (*see* § 280). Therefore, if the breech does not lie completely over the pelvic inlet, but a little to one side or the other, the patient should be placed on the same side, as being the most likely way of bringing the breech down into the canal. Even when the feet have advanced into the fruit-bladder before the breech, it is desirable that the latter should descend as low as possible before the membranes are ruptured, and therefore the patient should be laid on the side that is most suitable. Should the membranes be ruptured whilst the breech still lies above the brim and a little to one side, the patient must keep to the side mentioned, until it is well into the pelvis.

Besides the care for preserving the membranes

entire, the midwife will do well to make use of this period for preparing everything for the reception of the child, to take care that warm clothes are ready to wrap round those parts of the child that are born, and, as the children often come into the world apparently dead, to have everything in readiness for their restoration (*see* § 357).

§ 282.

Even after the complete dilatation of the mouth of the womb, in the commencement of the period of expulsion, the midwife must not encourage the patient to bear down, but should rather forbid all efforts of this kind, that her strength may be spared. Slowness in the progress of the labour is perfectly free from danger to the child at this period,—at any rate, less dangerous than later on. On the other hand, when the advance of the child through the pelvis is slow, the genital passages are better dilated, and better prepared for the passage of the shoulders and head; the pains are more powerful if they have not been supported too early by voluntary bearings-down; and one can reckon on a quicker course of the labour towards the end, when speed is most necessary.

Still less should the midwife pull at the presenting parts, or drag down a foot that is lying by the side of the breech, or attempt to twist the child round if its back is not lying towards the mother's front. The more the expulsion of the child, as far as the breast, is left to the pains, the more one may hope that the looked-for rotation of the back forwards will still take place, that the arms will descend at the same time as the head, and that the chin will not be bent back too far from the breast.

§ 283.

As soon as the breech, or, if a footling case, the hips, has entered the vagina, the patient must be placed in such a position that, should artificial aid be necessary, it may be rendered without any delay. This

is best on a *cross bed*. The midwife will do well, then, to place the patient upon a cross bed in all cases in which she has reason to expect delay, as in first labours, or where the pains are feeble, or the pelvis narrow. This is done as follows: a board is placed flat on the side-edge of an ordinary bed, and over this a hard cushion; the patient is placed crosswise upon this bed, in such a way that the genital parts project over the bed's edge; the head and back are supported by pillows, or by a chair placed upside down, which must be covered with cushions, and must slope sufficiently; the feet are placed on two chairs, standing in front of the bed, or on the laps of assistants occupying chairs suitably placed, whilst the midwife takes her place between the patient's legs. In order that the patient may not get cold, the legs must be previously clothed with stockings and drawers, or some other suitable covering.

If the midwife has not time to prepare such a bed, the patient may lie on her back, but the midwife must put a cushion under the sacrum, so that the genital parts may lie free and raised above the bed.

Or she may place the labouring woman in a somewhat slanting position across the bed, and as near its edge as possible, with one leg lying on the bed, and the other resting on a chair at the bedside, and well covered up. As when lying across the bed, the midwife takes up her position between the knees.

§ 284.

As the breech emerges, or, in footling cases, when the hips make their appearance through the genital fissure, the midwife supports the perinæum by only moderate pressure, and with the other hand receives and holds the expelled parts. These are immediately wrapped in warmed cloths.

As the trunk is farther expelled, the midwife must be careful that the navel cord does not get on the

stretch. If it should, in an exceptional case, run through between the legs, she draws down that part that runs up the back as far as will be required to slip it over the leg. If this is not the case, she draws the cord gently downward as soon as the child's navel has emerged, if it be not already lying slack.

As soon as the child is born as far as the breast, she must tell her patient to bear down at every pain. If pains are absent, she must endeavour to excite them by rubbing the base of the womb. As the shoulders and head emerge, she must only support the perinæum by moderate pressure, that the labour may not be delayed to the hurt of the child.

§ 285.

When a child is born as far as the breast, however, and, notwithstanding the use of all the means, strong and effective pains do not come on quickly, or if the arms do not come down with the trunk, but remain up beside the head, then, in case there is still no medical man at hand, the midwife must act for herself without delay: she must free the arms, draw down the head, and remove it from the pelvis.

In order to free the arms, it will be necessary that the trunk of the child be already through the pelvis as far as the shoulders. The midwife, if the feeble pains have not been able to do this, after covering the hips with a warmed cloth, grasps them with her hands in such a way that the thumb of each hand lies on the child's buttock, the forefinger is extended above the crest of the ilium, and the remaining fingers encircle the front of the child's thigh. She then draws the trunk carefully down, pulling during the pains, until she can reach the armpit easily with the forefinger. She then wraps the whole child in the warmed cloth, and goes on to free the arms. Each arm is set free by the hand of its own name,—thus, the right by the right, and the left by the left,—and always that one

first that lies most behind. Whilst the midwife raises the trunk, lying in the fork of the other hand, to the opposite side and a little upwards, she carries the fore and middle fingers of the hand that is to be used upwards and along the back and over the shoulder and upper arm to the bend of the elbow, and pushes the arm, at the same time bending the elbow over the face to the other side, then down to the breast and over this, and so down to the vulva. The liberated arm is placed by the trunk, and wrapped in the warm cloth. The second arm must be liberated by the other hand in the same manner, whilst the hand that holds the trunk lowers it sideways. During the whole operation, pressure on the upper arm must be carefully avoided, for fear it should get broken.

§ 286.

After the arms are set free, the head must be got out as quickly as possible. This is accomplished easily in proportion as the chin is near to the breast and low down in the pelvis. Nothing favours the entrance of the head into the pelvis so much as powerful uterine contractions, for which reason the midwife should order an assistant to rub the base of the womb, and the patient to bear down forcibly.

If the head be in the pelvic inlet, the face as usual turned to one side, the chin but little lower than the back of the head, the midwife, resting the trunk upon the forearm, should pass the fore and middle fingers of the hand that reaches the face most easily in front of the neck, over the chin and into the mouth, and by moderate pressure on the lower jawbone try to bring the face down into the pelvis and conduct it into the hollow of the sacrum.

If the head be already in the pelvic cavity, the two fingers of the one hand should be put into the mouth, in the way just described, whilst the fore and ring fingers of the other hand encircle the neck, and the

middle one rests against the back of the head. Whilst the midwife now draws down the lower jaw with the one hand, she assists this action by pressing the back of the head upwards with the other, and this brings the face over the perinæum in the direction of the middle line of the pelvis. Whilst this movement is taking place, the trunk of the child wheels upwards in the direction of the mother's belly.

If the head should be too high up in the pelvis to be brought out by this movement, it must be brought down first, and then over the perinæum in the way described.

The midwife must never think of attempting to extract the head by dragging at the neck; for not only may such a procedure be fatal to the child, but the trunk may even be torn away from the head, whereby the mother's life may be endangered. On the other hand, it would be a great advantage if traction on the head could be assisted by pressure from without; but this should only be trusted to an assistant who knows her business.

If the midwife has not succeeded in setting the head free in five or at most ten minutes, she may give up attempting to save the child, and should then await the arrival of a medical man.

§ 287.

If, as may rarely happen, notwithstanding a conscientious adherence on the part of the midwife to the instructions given, the back of the child does not turn to the front when the chest emerges, it will be very difficult to bring the arms down. It will be best in such a case to bring them down earlier than usual, before the space has been too much taken up by the advancing shoulders. Whilst the trunk is held by one hand, four fingers of the other are passed straight up over breast and face to the elbow; this is then carefully drawn down. The midwife must try if she can reach the elbow, and bring it down in the way men-

tioned without too great difficulty. If she cannot, she must give up the task ; especially she must make no attempt to twist the body of the child round, but wait patiently for the coming of the medical man. As the child cannot be saved, she must avoid doing anything that can harm the mother.

If she has succeeded in freeing the arms, however, and the head still remain high up, with the face to the mother's front, she should not drag at the trunk, but wait till the next pain drives the head lower down, in hopes that this will give it a more favourable direction. She should endeavour to excite pains by friction over the base of the womb. If she should then find the face turned to the side, and if she can reach the lower jaw, she must endeavour to pull it down into the hollow of the sacrum ; but if the face still remain directed forwards, she should make no further attempt to draw out the head, but only examine from time to time, after a stronger pain, to find out whether the head has altered its direction. If she should find the chin high up, and the back of the head pressed down first into the pelvis, she can help forward the expulsion of the head by directing the patient to bear down, and carrying the trunk towards the belly of the mother ; but this should be done without dragging at the neck. Pressure on the head from the outside is here very serviceable, but, as has been said, it should only be made by a practised hand. In those very rare cases in which the pains have driven the face behind the symphysis as low down as the forehead, the midwife can bring the head over the perinæum by gently pulling the lower jaw and neck in a rather upward direction.

§ 288.

It can only happen to be the midwife's duty to draw down by the legs, before the hips have been born, in a case in which the navel cord has come down with the feet, and then with a view to save the life of the

child. And even in such a case, so long as the cord pulsates strongly, everything must be left to the pains until the arms are set free. But if the pulsation of the cord becomes weaker and slower (*see* § 320), she must bring the child into the world as quickly as possible. She therefore orders the mother to bear down strongly whilst the pains are on; and if, notwithstanding this, the labour progresses too slowly, she proceeds to extract the child, *provided the mouth of the womb is sufficiently dilated or dilatable to allow the child to pass through.*

To accomplish this, she places the patient on a *cross bed*, or, if on the ordinary bed, she at least makes her lie across it in a slanting direction (*see* § 283). If both feet are down, but not visible from the outside, she carries one hand—the back of it well oiled with carbolized oil, and the fingers brought together at the tips—into the vagina (*see* § 300), and grasps the feet above the ankles in such a way that the middle finger lies between them and the other fingers on either side. She then, during the following pains, draws them out through the vaginal opening, whereupon she grasps each foot by a hand separately, each thumb resting on the calf of the leg. If only one foot is down, of course she draws by this alone. The direction she is to draw in is always backwards, as far as the perinæum will allow. She should not pull too strongly, nor at all but *during the pains*, in the meantime seeing that the patient continues to assist by bearing-down powerfully. If the pains are absent too long, they should be excited by external friction performed by an assistant. In proportion as the child is born, it should be wrapped in a warmed cloth. In the same manner she takes hold of the child's thighs higher up as they come down, until the hips come into view. How she is to grasp the hips, draw down the trunk, liberate the arms, and extract the head, has already been taught in the preceding paragraphs. (*See* §§ 285—287.)

4. Descent of an Arm or a Foot by the side of the Head.

§ 289.

Sometimes the midwife feels a hand behind the membranes, by the side of the head. If she lays the patient on the opposite side,—that is, the side towards which the back of the head is directed,—the hand will be withdrawn as a rule. Even after the escape of the waters, if the patient lie on her side, the hand will generally remain behind the head as this descends.

Occasionally, however, the hand passes through the pelvis by the side of the head, without the labour being particularly difficult. If it seems to retard the progress of the labour, the midwife can keep it back during the pains until the head has advanced farther. She may push it completely back, if it can be done easily.

§ 290.

It is worse if an arm lie before the head as far as beyond the elbow. One can only hope it will go back, by putting the patient on her side, if the membranes are unruptured. This cannot be reckoned on otherwise. The labour is rendered more or less difficult by the descent of an arm, and the regular rotations of the head within the pelvis are hindered. In every case the midwife must let a medical man be called. Until his arrival, she must lay the patient on the side opposite to that on which the arm has descended, and try to keep it back as much as possible during the pains.

§ 291.

A foot only rarely shows itself by the side of or before the head, and generally indeed when the child is small and dead. Usually, as the labour advances, one of the two withdraws itself, and the labour runs its course as a simple head or footling case. If the attitude does not change, however, and labour ceases to advance, or if the head and foot are driven into the

pelvis at the same time, a medical man must be called in. Until he arrives, the midwife should try—with caution, by the aid of one or two fingers—to keep back the foot during the pains.

5. *Cross Births.*

§ 292.

Cross births are those in which the principal mass of the child's body—that is, the head and trunk—does not lie in the line running from the base to the mouth of the womb, but the head lies in one side, and the buttocks and feet in the other side of the uterine cavity. One of them is generally nearer the mouth of the womb than the other, and consequently the child lies rather in a sloping direction than directly across the womb. It is the head that most frequently lies lowest.

If the womb be of a proper size and shape, and its walls of a proper firmness, the child cannot well take a sloping or transverse position. But if the womb be unusually roomy,—for example, if it contain too great a quantity of waters, or if its walls be very relaxed and yielding,—such a faulty position may be easily assumed, so long as the child is completely above the pelvic brim, and thus especially if a narrow pelvis prevent the entrance into it of the head or breech. In first-child cases, oblique or transverse positions are exceedingly rare.

§ 293.

Two kinds of oblique and transverse positions are distinguished. In the first, the child's back faces the front; in the second, it faces backwards. During pregnancy, and even in the first part of the labour, before the waters have escaped, and whilst the pains are still weak, the attitude of the child generally remains natural. The less deviation there is from this—that is, the less the child is doubled up on itself—

the higher is the child kept back in the womb, as the lower, narrower segment cannot thus admit it. As the pains increase in strength, and the diminution in size becomes more decided, the child must either change its presentation or its posture. If the pelvic end lies nearer to the mouth of the womb, the case generally ends as a pelvic one; but if the head end lies the lower, then the posture of the child changes rather than its presentation. After the waters have escaped, the change into a head presentation is not to be expected. Above the internal mouth of the womb a shoulder is generally found. The posture of the child is now changed in such a way that the shoulder that looks downwards is forced in that direction, the head is carried near to the shoulder of the opposite side, and the pelvic end is raised up towards the same side; and thus a shoulder presentation is brought about. The line of the shoulders corresponds to the cross or one of the oblique diameters of the pelvic inlet. Frequently, as the waters flow off, the arm that is lying below glides down, and gradually falls through the mouth of the womb into the vagina.

§ 294.

The midwife recognises a transverse presentation during pregnancy, or in the early stages of labour, before the membranes are ruptured by external examination, with greater ease and certainty in proportion as the uterine walls are lax and undistended. The womb has not its usual shape—that of an egg—but is irregularly widened. The midwife feels a large portion of the child's body on each side, but the two portions are not on the same level—one is higher than the other; and she will often be able to distinguish the head from the pelvic end. If the belly of the child be turned to the mother's front, small portions will be found on each side. It is more difficult to decide when the womb is distended by an excessive quantity of waters. The shape is then more

rounded, and the tight stretching of the uterine walls prevents any very accurate examination of the parts inside. The heart-sounds are generally to be heard about the navel, above or below, and to one side, and most plainly on that side on which the head lies. The

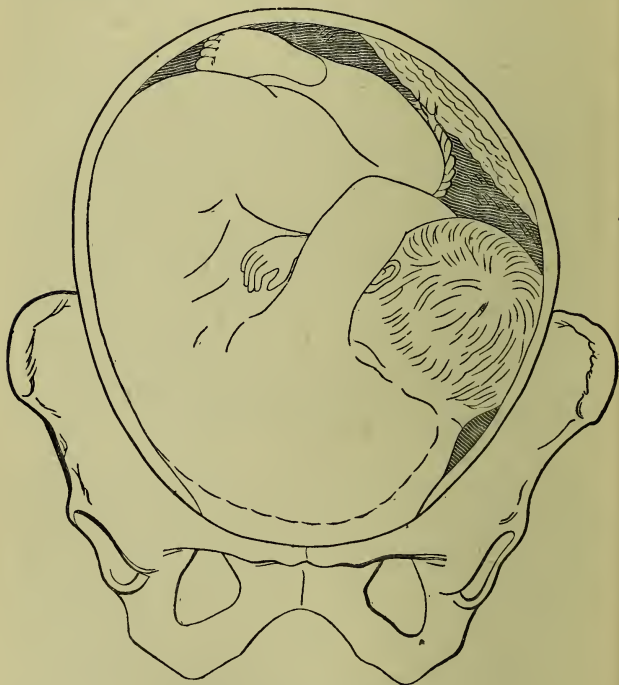


Fig. 9.—Shoulder Presentation.

child cannot generally be reached internally yet, unless an arm has slipped down in front of the shoulder into the fruit-bladder. The higher the midwife can pass her finger up, the membranes being entire, without feeling anything of the child, the more certain she may

be that neither the head nor the breech is presenting. She must be very careful in the meantime not to rupture the membranes: it is better to remain undecided for the time than do this. Her principal attention at this period is directed to the external examination.

After the rupture of the membranes, when, the child being very high up, the greater part of the waters flow off, the irregular presentation is more plainly perceived from without, although the various parts of the child may not be distinguished with so much certainty as at an earlier period, on account of the increasing thickness and hardness of the uterine walls. At this period an internal examination yields more results on this point. If an arm has fallen down, so that the hand can be reached, its recognition is easy. It is more difficult to distinguish the elbow from the heel when the narrow passage of the neck of the womb will not allow a finger to be passed upwards. But with the mouth of the womb sufficiently wide, the arm leads straight to the shoulder, and the midwife has only to see if the head is also above the pelvis, by the side of the arm. If the shoulder does present, the arm shows which of them it is. It is more difficult to make out the shoulder when the arm is not before it. The points by which it is distinguished from the breech—with which it is at first most easily confounded—are the clavicle (collar-bone); the movable shoulder blade; the ribs, lying by the side of one another like fine hard bows; the backbone, which feels like a row of little hard knobs; and the neck, lying close by. Sometimes the finger can be made to reach the lower jaw. The midwife should often examine these parts in living children, so that in such a presentation as we are considering she may be able to recognise them all by the feel.

§ 295.

A premature, dead child, presenting transversely, may still be born if other things are favourable; *but*

neither a premature nor a mature child presenting transversely can pass through the pelvis alive without being first turned. Turning—that is, changing the transverse presentation into a direct one—may indeed be brought about by the pains themselves, before the membranes are ruptured, as has been already mentioned. After the escape of the waters, however, this need not be reckoned on; and now, if artificial aid is not rendered, the course of the labour is always fatal to the child, and often to the mother. The womb withdraws itself more and more from over the child, and drives it to a great extent into the canal of the neck of the womb—thinned and stretched out lengthwise,—and through this into the vagina. The shoulder is forced down deep into the pelvis; the fallen arm swells; the child dies. Occasionally the pains rise to great activity; more frequently a tetanic rigid contraction of the womb comes on, or an inflammation; and if the patient be not quickly delivered, she may die undelivered, from rupture, or inflammation of the womb, or from exhaustion, in the same manner as in delayed labour from narrow pelvis (*see* § 246).

In exceptional cases, powerful pains drive the dead and softened child, shoulder foremost, deeper and deeper into the pelvis. The shoulder descends until it becomes fixed under the pubic arch; and whilst blocked against this, the breast, belly, buttocks, and legs come down through the pelvis by the side of it, and over the perinæum; at last come the shoulders themselves, and then the head. This *spontaneous expulsion*, as it is called, is, however, a process exceedingly dangerous to the mother, on account of the necessarily long and difficult labour always associated with it, and the consequent severe bruising of the genital passages.

§ 296.

As soon as the midwife has ascertained that a case is one of transverse presentation, or cross birth, or if she

only suspects it to be so, she must insist on a medical man being called in at once ; for if in any doubtful case she should wait till it become certain, she may easily wait until too late for artificial aid to be of service.

If she is sure of the presentation, until the arrival of the medical man she may try if a suitable position on the part of the patient will not change the transverse presentation into a direct one. For this purpose she directs her patient to lie on the side occupied by that end of the child that lies nearest to the mouth of the womb, as ascertained by external examination, and supports those parts by a pillow or cushion. If she be in doubt, however, as to the position of the child, she places her patient on her back.

In the meantime her principal care must be to keep the membranes entire, for she cannot depend with certainty on the result of keeping the patient on her side. But turning, which must now be performed, is not only more easy with the membranes unruptured, when the posture of the child is natural and its movements free, as well as more sparing to the mother, but it is also performed with a better prospect of saving the child. The most favourable moment for performing the operation of turning is that in which the membranes are unruptured and the mouth of the womb is fully dilated. The midwife must, therefore, see that her patient keeps very quiet, and restrains herself from any bearing-down. She herself must make her internal examinations with the greatest caution, and make no more when she has once made out the presentation, —unless the external examination leads to a suspicion that the presentation has changed—until the membranes have ruptured of themselves.

If the waters should unfortunately flow off before the medical man comes, she must still continue to keep the patient as quiet as possible, and in an easy position, and still prevent her bearing-down. As has been already said, the improvement of the presentation is no longer to be expected ; and, with such a presen-

tation, the next best thing is for the labour to come to a standstill.

§ 297.

Only exceptionally—and then only when medical assistance cannot be procured at all, or not at the right time—should the midwife herself venture to turn, for the sake of the mother and child.

1. If, *when the membranes are ruptured, the mouth of the womb is fully dilated, and the midwife can foresee with certainty that a medical man cannot arrive for at least two hours, then, if the patient has already borne children, and the pelvis is wide, she is permitted to turn the child by the feet*; for immediately after the escape of the waters, the uterine walls are still generally so yielding that turning can be performed with ease; but later, when the womb has contracted further, has pressed upon the child, and forced the advanced shoulder deeper down into the pelvis, it may be exceedingly difficult even for a medical man. (See § 295.) Wherefore, if considerable time has already elapsed since the escape of the waters, the midwife is no longer permitted to undertake the operation, even if other conditions are favourable.

2. If it be certain that, from the time of discovering the transverse presentation, at least twelve hours will elapse before a medical man can be on the spot, or if, speaking generally, medical aid is not to be counted on, then the midwife may undertake the operation, under all circumstances, as soon as the most favourable moment for its performance has arrived—that is, when the mouth of the womb is fully dilated, and the membranes are still entire.

If the midwife has a case in which she is permitted to turn, and she does not feel courage enough to undertake it, it would be better not to attempt it, as such an attempt, badly carried out, is likely to do harm to both the child and its mother. If she has commenced the operation, and then discovers for the

first time that her judgment has been wrong, and that the difficulties are too great for her, it will be her duty to give up at once any further attempts, and wait for the medical man.

§ 298.

The object of turning is to change a cross birth into a footling case. For this purpose, the midwife passes her hand into the womb, searches for the feet, and draws them through the mouth of the womb, and through the vagina, until the knees are born, whereupon the turning of the child is completed.

§ 299.

Before the midwife undertakes to turn, she must inform herself accurately, by external and internal examination, as to the position of the child within the womb,—in which side lies the head, and in which lie the breech and feet,—which way the child's abdomen is directed, and which way its back.

The patient must pass her urine; in case of need the midwife must draw it off with the catheter. In like manner, if the lower bowel is full, it must be cleared out by an enema.

The necessary apparatus must be at hand. These include two turning loops, warm cloths for wrapping round the parts of the child as they are born, and the means for recovering apparently dead children. (*See* §§ 281 and 357.)

The patient may be on her back or on her side. If an ordinary bed is used, she can only be on her back if lying across in a slanting direction (*see* § 283). The position on the side is much to be commended (*see* § 111), and particularly if the abdominal surface of the child is directed forwards. The midwife places her patient on that side which holds the breech and feet, she herself taking up her place behind.

If the operation is performed with the patient on her back, that hand should be used that lies opposite

to the side where the breech and feet lie : thus, if these lie on the right side of the womb, the left ; if on the left side, the right hand should be employed. If the patient be on her side, she turns with that hand not of the same name as the side on which the woman is lying.

[It may be taken for granted that the patient will lie on her left side with the knees drawn up. Many people prefer the left hand for turning, whatever way the child may be lying in the uterus. There are two points of some little importance in its favour : first, the left hand is almost always a little smaller than the right ; second, the left hand lies more easily in the hollow of the sacrum than the right does, and consequently does not so soon become cramped should the case prove difficult.]

§ 300.

Before the hand is introduced into the vagina, she oils the back of it, and the arm as far up as the elbow, well (with carbolized oil). Then, during a pain, with the finger-tips brought well to a point, she passes the hand slowly through the opening of the vagina, by a slight twisting movement, so that when it is completely within the vagina the back of it looks towards the hollow of the sacrum. It should lie here till the pain is over, for it should be passed into the womb itself only in a free interval between the pains. It is desirable to complete the turning in the interval between two pains. If she does not succeed in doing this, and the hand is surprised by a pain whilst within the womb, she must let it lie perfectly loose and motionless in its place whilst the pain lasts. Before passing the hand into the womb, the midwife should never neglect to place the other hand on its base to support it, and to keep the parts of the child against the hand that is within the womb. The patient must be warned to abstain from any bearing-down whilst the turning is going on.

§ 301.

If the membranes are still entire, the midwife now ruptures them as soon as the pain goes off; she then passes the hand quickly through the rent into the cavity of the womb, so that the arm, now blocking up the vagina, prevents the too rapid escape of the waters. If they have been ruptured before, they will generally have been withdrawn from over the presenting part of the child, and the hand glides upward in contact with the inner surface of the womb. If the presenting part of the child blocks up the way in front of the hand, it must be pushed by the thumb to the opposite side (but without violence) as far as is necessary for the introduction of the hand. If the navel cord has fallen down, it is carried back into the womb, so that it may not be compressed by the arm lying in the vagina. If an arm has fallen down, the midwife leaves it in the vagina without disturbing it, as when the turning is completed it does not then get separated from the trunk; this end is attained with most certainty by putting a loop round it. Within the womb, the midwife passes her hand upwards, with the flat of it towards the child's body, the back of it being turned towards the internal surface of the womb. It passes slowly and steadily onwards, over the abdominal surface of the child, or along the presenting side of the trunk, over the hip, on to the feet. In all this, the unavoidable pressure is directed towards the child rather than towards the womb, whilst every care is taken to avoid any pressure on the navel cord. As the hand glides upwards over the child's body, she should bear in mind what parts she is touching, and observe whether the position of the child within the womb is really what her examination made her think it was. As an incomplete foot presentation is more favourable to the course of labour than a complete one (*see* § 280), and as, considering the circumstances under which it will generally be the midwife's lot to turn, the operation will be most easily performed by bringing *one foot* down, the midwife will do best by

bringing down *only one*, and that the one that is lying lowest.

If she has gone straight up the abdominal surface, the knees will generally be found not far from the face, and close to the elbows; the midwife must therefore be careful not to mistake the one for the other. She will be secure from this mistake if she carries her hand upwards by the side of the trunk, over the hips, and along the thighs. Whether she has chosen the one way or the other, she first presses the thigh back upon the abdomen with the forefinger, draws the leg to the thigh with the middle finger, and, holding it in this position, passes the forefinger over the heel and foot-sole up to the toes, in order to be quite certain that it is the foot; she grasps this above the ankle, between the middle and forefinger, and draws it carefully down over the abdominal surface of the child, into the mouth of the womb, into the vagina, so far that the child's body turns itself, and the breech presents itself above the pelvic inlet. She seeks to aid the turning by pushing the parts that lie in front sideways and upwards with the thumb of the hand that grasps the foot, at the same time pushing the head carefully upwards from the outside with the other hand.

§ 302.

Supposing the foot that is being drawn down has reached the upper part of the vagina, and moderate pulling will not bring it any farther, violence must never be used under any circumstances. This fact of the foot not coming farther is a sign that difficulties have arisen. Frequently it is a uterine contraction, brought on by the presence of the hand within the womb, that hinders the turning. In this case the midwife must remain quiet until the other hand, laid upon the womb, tells her that the womb is relaxing again. If no pain is present, and yet the foot does not follow, a loop must be put round it; then the hand must be passed up the leg into the womb, and the other foot

brought down ; and now an attempt must be made to accomplish the turning by drawing on both feet at once. If this does not succeed, she must pass a loop round this foot also ; she then draws by means of the loops with one hand, and the other she passes into the vagina, and with it gently pushes back the part that hinders the turning. She continues this until the turning is completed, often with a jerk.

§ 303.

After the turning has been accomplished, the midwife again places the patient in the ordinary position, and proceeds just as if the case had been a footling one from the first.

CHAPTER II.

IRREGULAR SIZE AND FORM OF THE CHILD.

§ 304.

The midwife forms an estimate of the size of the child, not only from the distension of the womb, which may depend in part on the quantity of the "waters," but principally by the size of the various parts as revealed by the external examination, and even by the greater or less amount of movement allowed within the womb.

The size and hardness of the head are particularly important in labour. A large child has not always a large head. The midwife can in part estimate the size of the child's head by external examination, so long as the larger part of it is still above the pelvis. On examining internally, she must particularly bear in mind the relation of the head to the pelvis—that is, how much of the length and breadth of the pelvic inlet is filled up by the head. The hardness of the head is also to be considered. A hard head is generally a large one.

Narrow sutures, small fontanelles, and a slight degree of movement *between* the different bones, allow a decision on this point. But it is always difficult to ascertain the size and hardness of the head with accuracy, and the principal point for the midwife to observe is that, with a large pelvis, good pains, and a favourable presentation, the labour does not advance. A medical man must then be called in, and in the meantime the case treated exactly like one of contracted pelvis.

§ 305.

On very rare occasions, water in the head of the child is a cause of prolonged labour. The skull may then reach an extraordinary size. The midwife recognises the presenting *hydrocephalic* head, as it is called, by the thinness and yieldingness of the bones, the width of the sutures, and the size of the fontanelles. During the pains the edges of the bones separate farther and farther from each other, whilst at the same time the tension and feeling of elasticity increase; occasionally the head bursts, and then, when the water has run off, the head enters the pelvis easily. If it does not do this, however, and if, notwithstanding strong pains, the head remains above the pelvic inlet, the very same dangers threaten the mother as if delivery were impossible on account of contracted pelvis or cross-birth. (See §§ 246, 295.) In such a case, prompt medical aid is absolutely necessary.

If a hydrocephalic child present with the breech or feet first, the head will remain behind after the trunk has been born. If the medical man, who will have been already called in on account of the foot presentation, be not yet at hand, the midwife will herself be able to recognise the cause of the delay, in part by external examination, the womb still remaining of an unusually large size; in part by internal examination, by the width of the sutures at the side of the head. If she does not soon succeed in getting the head into the pelvis by the usual methods, she must not make

any further attempts, but wait for the assistance of the medical man.

§ 306.

More rarely still, an extraordinary distension of the child's belly is a cause of difficult labour. It may depend on a collection of water in the abdominal cavity, of urine in the bladder, or kidneys enlarged by disease, etc. In such a case, whichever end of the child comes foremost, it advances as far as the abdomen, and there sticks fast. The midwife will not well recognise with certainty the cause of this unusual delay. She must send for a medical man, and avoid attempting to force the labour on by violent pulling at the parts that are born.

§ 307.

Deformities of the child may be of manifold varieties, but they delay labour only when some particular parts are greatly enlarged, also when some limbs are doubled, or when twins are grown together. The midwife will hardly be able to recognise these and such-like hindrances to labour, but she must always abide by the rule to seek medical assistance in every case of unusual delay.

The deformities most frequently met with are—

1. Partial or complete absence of the bones of the skull and of the brain.

2. Hare-lip; splitting of the upper jaw; split palate.

3. A baggy protuberance, or a firm tumour, on the spinal column, most frequently in the region of the sacrum, or loins (fissure of the spinal column—*Spina bifida*).

4. Rupture of the navel, often of considerable size, so that a great part of intestines, stomach, and liver find a place inside; it sometimes ruptures during labour.

5. Conjoined lower extremities, which sometimes end in only one foot.

The midwife must bear all these deformities in mind when any unusual part presents itself. The labour is not so liable to delay as might be the case, as the children are mostly born before the time. It will naturally be understood that such deformed children should not be shown to their mothers at once, and even later on care should be taken in doing it; but a medical man should be called in immediately.

CHAPTER III.

DEATH OF THE CHILD DURING LABOUR.

§ 308.

The midwife knows the child is living during labour by the heart-sounds and movements of the child. If the cord is down, pulsation of it is a proof that the child is alive.

§ 309.

The midwife knows that a child is becoming weak by the sounds of the child's heart—when the cord is down, its pulsations—becoming weaker and slower. In head presentations, it is a bad sign if the child's fæces come away; but in breech and footling cases, at least, after the breech has entered the pelvis, the occurrence is not of such unfavourable significance.

§ 310.

If the midwife has heard the child's heart-sounds loud and distinct in the early part of labour, if they have then become weaker and slower, and if at last, after a thorough search, she cannot hear them at all, she may conclude with much probability that the child is dead. But if the heart-sounds were indistinct from the commencement, their disappearance is not so significant. The death of the child is beyond a doubt when

there has been no pulsation in a prolapsed (fallen) cord for hours, and the like also if signs of putrefaction show themselves in parts already born. That movements of the child are no longer felt is no proof of death, as, after the escape of the waters, it often occurs that no movements are perceptible even in living children; and just as little are the escape of foul-smelling waters containing child's fæces, softening of the scalp tumour, great looseness of the bones of the head, an open condition of the child's *anus*, etc.

§ 311.

A child may die during labour from various causes. All those harmful conditions that interfere in any way with the due communication of the child with the mother's blood through the placenta weaken the child, and, if long continued, prove fatal. Amongst these are: pressure on the navel cord, rupture of the cord, premature separation of the placenta; further, the pressure the brain of a child undergoes in a difficult passage of the head through a narrow pelvis, or otherwise contracted genital passages, as by reason of this the heart's activity is lessened; finally, every great and enduring diminution in the size of the uterine cavity, whereby the approach of bright red blood is hindered, as when the pains are very violent, and follow one another with great rapidity, or when, after the waters are all discharged, and part of the child is out of the womb, labour is delayed. Under these circumstances the children are suffocated within the womb. Usually, in the pang of suffocation, urine and excrement are expelled, and they make premature attempts to breathe, in consequence of which the fluids within the genital passages—waters, excrement, mucus, and blood—are forced into the mouth and nasal openings. (*See* § 86.)

§ 312.

The midwife must pay strict attention during labour

to all the signs, so that if any danger threaten the child, she may be aware of it at once. Being made aware, a medical man should be sent for immediately, for it is often possible to save the child by delivering speedily. We have already spoken of those cases where, medical assistance not being at hand, the midwife herself must attempt to bring the child into the world. In all cases the means employed for restoring apparently dead children must be in readiness.

The death of the child, as a rule, has no special effect on the progress of the labour. The midwife should say nothing to the mother as to the suspected death of the child; for her own justification, she may communicate her opinion in private to some of the relatives. But when the dead child becomes putrid within the womb, as it often does rapidly after the rupture of the membranes, and in the warm season of the year, and the fact is proclaimed by the discharge of stinking liquid, with bubbles of air mixed up with it, labour must be completed as quickly as possible, as a longer retention of a putrid child in the genital passages might be very injurious to the mother. If, therefore, a medical man has not been sent for already on account of those conditions that have brought about the death of the child, no time is to be lost. Until his arrival, the midwife should wash out the vagina with lukewarm water injections every hour or half-hour.

If the decomposed child come breech or feet foremost, the midwife must be careful not to pull at the trunk too strongly, as it may easily be torn away from the head, which would then be very difficult to get away.

(b) *Irregular Labour depending on the Remaining Portions of the Ovum.*

CHAPTER I.

IRREGULAR CONDITIONS OF THE MEMBRANES AND WATERS.

1. *Irregularities of Membranes.*

§ 313.

The membranes may be too thin and tender, and on this account rupture too early, before the mouth of the womb is sufficiently dilated, and indeed before the commencement of distinct pains even. The membranes being ruptured, then the less closely the presenting part of the child blocks up the mouth of the womb, the more completely do the waters flow off, sometimes slowly, sometimes more quickly. The injurious consequences of such an occurrence, and what the midwife can do to avoid or lessen them, have already been repeatedly spoken of. If this has occurred, the midwife must take care that her patient keeps in a resting position, and refrains from any premature bearing and pressing-down efforts.

Often the membranes do not rupture at the point of the ovum, but at some higher spot, and then it may happen that only a small part of the waters flows off, and that gradually, whilst the opening is generally blocked up by the succeeding contractions of the womb. The presenting part of the child is felt in the mouth of the womb, covered by the uninjured membranes, and a bag of waters even forms, which later on ruptures.

In other cases, only the chorion at first ruptures at the extremity. The bag of waters will then consist of the amnion alone, and this, notwithstanding its thinness, generally ruptures later, as the amniotic membrane is capable of much greater distension than the chorion is. (*See* § 314.)

Sometimes the liquid that runs off is not the real

amniotic liquid, or *true waters*, but so-called *false waters* that have collected between the decidual membrane and the chorion; or the supposed waters do not come out of the uterine cavity at all, but are simply urine of a very watery quality, and without any smell, discharged from the patient unconsciously and in gushes. The midwife should suspect this when, notwithstanding the discharge of large quantities of liquid, the form and size of the womb remain unaltered.

§ 314.

If the membranes are too firm and tough, the rupture of them will be long delayed; but if they are at the same time very distensible, this is generally no great disadvantage. The fruit-bladder is driven through the dilated mouth of the womb, deep down into the vagina, into the vulva even sometimes, and if there be but little or no water within it, the membranes sometimes do not rupture until the moment when the head is born. It is then born with a covering of membrane over it—the caul, or “lucky cap,” which the midwife must remove immediately, to free the openings of the mouth and nostrils. If the fruit-bladder is filled with waters, and the waters do not break after the mouth of the womb is well dilated, and the head is in a favourable position within the pelvis, then the midwife may rupture the membranes. To do this, she passes the forefinger close behind the pubic arch during a pain, and passes the tip of the finger into the fruit-bladder as if she would push it against the sacrum. As a rule, she will do better to wait until the membranes rupture of themselves. Only in case of the emergence of the membranous bag through the vulva should she grasp it with the fingers and tear it.

It is worse when membranes that are too tough are at the same time not capable of stretching. The tip of the ovum will then be rendered tense, during the pains, by the waters, or the presenting part of the child; but the fruit-bladder will not be driven into

the neck of the womb, and through the mouth of it, as at other times, and it will therefore have but little influence in dilating these parts. In consequence of the dragging the inner uterine wall undergoes from the distended membranes, the pains are often agonizing. Sometimes the edge of the placenta is separated, and this gives rise to hæmorrhage. In such a case the midwife may very easily be deceived as to the cause of the lingering labour, and on this account she should seek medical assistance if the stage of dilatation is very much lengthened out, and as soon as the above-named appearances show themselves.

2. Irregular State of the Waters.

§ 315.

The waters may be too great in quantity. In such a case the midwife finds the womb much and uniformly distended, of a globular form, and by tapping it the fluctuation of the fluid can be distinctly felt. The great distension of the walls does not admit of the different parts of the child being so plainly distinguished by the touch; moreover, the child is generally smaller than usual.

Towards the end of pregnancy this condition may become very burdensome, from the painful distension of the abdominal walls. At the same time the diaphragm is driven upwards, the breathing space is diminished, and consequently respiration becomes difficult. Not unfrequently labour sets in before the time. The uterine cavity is so roomy that the little foetus easily takes up an irregular position or attitude (*see* § 292), the pains are generally weak (*see* § 209), and after delivery the womb often contracts imperfectly.

§ 316.

If an excessive quantity of waters gives rise to serious difficulties during pregnancy, the midwife must send the patient to a medical man. If labour has

commenced, then she should lie down early, so that she may not be surprised by the rupture of the membranes whilst in an upright position. If the child is in a faulty position or posture, a medical man must be called in, of course, the same if the dilatation of the womb is unduly delayed. The expulsion of the child should be left as much as possible to the pains themselves; the patient should make very little use of voluntary efforts, and not at all towards the end of the labour. After the head is born, the midwife should try to prevent the too rapid advance of the trunk, by moderate and continued pressure against the perinæum, until another pain comes on, and with the other hand the base of the womb should be grasped, so that its condition as regards contraction may be watched over.

§ 317.

With the membranes uninjured, and the child living, the quantity of waters is never actually found so small as to have an injurious effect on the course of labour. But, on the other hand, after the rupture of the membranes under unfavourable conditions, the waters may in greater part or even entirely flow off—an occurrence the considerable dangers of which, in regard to the child, have been repeatedly spoken of. (*See* §§ 211, 246, 280, 295.)

In like manner, the decrease of the waters in those cases in which a dead child is shrivelled up has been mentioned. (*See* § 198.)

§ 318.

Sometimes in head presentations the quantity of water within the fruit-bladder is small, although the quantity within the womb may be the usual one, or even abundant; the membranes lie flat to the head, and are but little separated from it even during a pain. This is often the case when the head has fallen down into the pelvis during the pregnancy as the neck of the womb has unfolded, and so blocked up the passage

that the waters cannot pass by. Under these circumstances the dilatation of the mouth of the womb goes on slowly,—the more slowly, the less the membranes are capable of yielding. If the membranes are very yielding, the child is often born with the “lucky cap” (caul). (*See* § 314.) The midwife can do nothing to relieve this condition, and in case of necessity, if the stage of dilatation be too long, she must call in a medical man.

CHAPTER II.

IRREGULARITIES IN CONNECTION WITH THE NAVEL CORD.

1. *Descent of the Cord.*

§ 319.

Descent of the cord is one of the most dangerous accidents that can happen to the child. A distinction must be made between the cord lying in advance of the head, when a loop of it is felt through the unruptured membranes, and descent of the cord, when it falls through the mouth of the womb into the vagina, after the membranes are ruptured.

The cord may descend along with any part of the child; it most frequently does so along with the head or feet (*see* § 280). It not unfrequently occurs in cases of cross-birth, but is then only of second-rate consideration. The method of procedure in footling and cross-birth cases, which independently of this require the attendance of a medical man, has already been described, and on this account only descent of the cord with the head will be mentioned here.

As in other cases, the navel cord falls along with the head the more easily in proportion as the head is high up in the pelvis and the mouth of the womb is imperfectly closed by the presenting part. For this reason descent of the cord is most frequently met with in contracted pelvis. The accident is favoured

by length of the cord, or by its lying near to the internal mouth of the womb, as when it is attached to the lower edge of the placenta or twisted round the child's neck.

§ 320.

Descent of the cord is dangerous to the child from the pressure it undergoes whilst the child, and particularly the head of it, is passing through the pelvis. The stronger and more continuous this pressure is, the more is the communication between child and mother disturbed, and, it may be, cut off. The child must then as a matter of necessity die of suffocation. The midwife knows that the cord is pressed upon by its pulsations becoming weaker and slower. They regularly become so during a pain, and at the same time the cord feels fuller and harder.

§ 321.

As long as the head remains high up and loose above the brim, the midwife must bear in mind the possibility of a descent of the cord, and she must avoid everything that can favour the occurrence of this accident. She should therefore let her patient lie flat on her back, enjoin her to avoid all violent movements, all bearing-down during a pain, and examine carefully and accurately as to whether the membranous bag contains a soft, easily movable portion, which is recognised by its pulsation to be the cord.

If the midwife finds a loop of the navel cord presenting along with the head, she must send for a medical man without delay, if one has not already been called in on account of the narrow pelvis. It must be her first care, until his arrival, to keep the membranes unruptured, as, so long as they are kept entire, the cord undergoes no pressure, as a rule. She should place her patient carefully on the side opposite that on which the loop has come down, and strictly forbid her to bear down. This proceeding somewhat alters the

direction of the child in regard to the pelvis, and with this alteration the cord sometimes disappears from the pelvic inlet.

§ 322.

If the membranes are already ruptured, however, when the midwife first discovers the cord presenting, or if they rupture before the arrival of the medical man, she should place the woman on her back, with the pelvis somewhat raised, and take care that the cord does not come out of the vagina. It is generally sufficient for this purpose to place the thighs together; but if the cord should fall outside notwithstanding all this, it should be covered with a clean, moist, warm cloth. The patient must keep very quiet in the meantime, and not bear down so long as the head is not in the vagina, so that there may be as little pressure on the cord as possible. But if the pains drive the head through the mouth of the womb, down into the vagina, the patient must assist all she can by strong bearings-down, as at this point nothing but a quick termination of the labour can save the life of the child.

2. *Irregular Shortness of the Cord.*

§ 323.

Not only may the cord be rendered practically too short by being wound round the child (*see* § 112), but it may really be too short. The cord is rarely so short that the birth of the child is hindered thereby. If it should be so, however, the patient complains, with every pain, in the stage of expulsion, of a tearing pain at some particular spot. Occasionally, when the pain goes off, a little blood escapes by the side of the child's head, for the reason that the dragging at the cord causes some premature separation of the placenta. All these signs are uncertain, however, and the midwife cannot be certain of the defect until after the birth of the child. In consequence of the dragging, the cord

may snap as the child is expelled, or the womb may be turned inside-out (inverted). For these reasons the midwife must keep a sharp eye on the uterine contractions whilst the trunk is being expelled; and when the child is born, she must lay it across and not too far from the genital parts of its mother. If any delay occurs, a medical man must be called in.

3. *Rupture of the Cord.*

§ 324.

So long as the patient is lying down, the cord very rarely breaks before or as the child comes into the world. It does so more frequently if the child is born whilst the patient is in the standing or sitting posture—the child shooting out on to the floor. The midwife should immediately tie *the child's end* of the cord, so that it will not bleed to death. If the cord is torn off close to the navel, a pad of linen dipped in cold vinegar and water should be laid on the bleeding spot, and pressure kept up over it with the finger, until the medical man, who should have been immediately sent for, makes his appearance.

§ 325.

Sometimes the cord is attached to the chorion at some distance from the placenta, so that the vessels run along the membranes separately to reach their destination (*see* § 41). It is unfortunate if such a vessel runs through a part of the membrane that covers the mouth of the womb, seeing that it may be ruptured along with the membranes. If the midwife, therefore, in her examination, feels a cord in the membranous bag which by its pulsation she knows to be an artery, it will be her duty to call in a medical man at once, in order that he may be on the spot when the rupture of the membranes takes place. For if one of the arteries of the cord were wounded, the child would bleed to death if the labour were not quickly completed.

Until the medical man comes, the midwife will of course do all she can to prevent too early a rupture of the membranes.

CHAPTER III.

IRREGULARITIES IN CONNECTION WITH THE PLACENTA.

1. *Premature Separation of the Placenta during Labour.*

§ 326.

When the placenta is attached in its usual place, it does not generally begin to separate until after the end of the labour, or at least not till towards the close of the stage of expulsion, and then only partially. As a rule, no blood escapes outwardly from this, as the foremost part of the child blocks up the way; but the blood that has collected within the womb rushes out after the child, along with the remainder of the waters. The quantity of blood that collects is rarely great, as before the child is expelled there is not room for much in the contracting womb.

§ 327.

Occasionally, however, a partial separation of the placenta takes place in the period of dilatation, before the rupture of the membranes, and there is a flow of blood before the child. In such a case the placenta is generally attached near to the internal mouth of the womb. The midwife may suspect this when the membranes feel rough and uneven, as they generally do near the edge of the placenta. Even if the placenta is attached high up, the less distensible and more firm the membranes are, the more liable is the placenta to separate during the pains (*see* § 314). Generally the hæmorrhages abate as the labour progresses, so long as the placenta is not situated over the mouth of the womb; in particular, they often cease at the end

of the first stage of dilatation, on rupture of the membranes.

§ 328.

If there be any considerable loss of blood during labour, the midwife must cause a medical man to be sent for. She must bear in mind that the blood may spring from a laceration of the womb, or the bursting of a varicose vein. How these hæmorrhages are to be recognised, and what is to be done for them, has already been taught (*see* §§ 234, 235, 252, 253). Those exceedingly rare hæmorrhages that spring from rupture of the cord before the birth of the child (*see* § 324), or from rupture of an artery running across the fruit-bladder (§ 325), are insignificant in quantity, although so dangerous to the child. If a premature separation of the placenta is a cause of the hæmorrhage, the midwife, until the arrival of the medical man, must proceed according to the rules laid down for the treatment of placenta prævia.

2. *Delayed Separation of the Placenta (Retained Placenta).*

This will be considered in the following section.

(c) *Irregular Labour from Plural Pregnancy.*

§ 329.

Twin births occur, on an average, once in every eighty or ninety labours. Usually each child is enveloped in its own amnion and chorion, with one decidua round them both. Sometimes, however, the two have one common chorion, and each its own amnion. In very rare cases they lie in the same cavity, enveloped in one common amnion and chorion. Where the two sacs touch each other, they are very closely united together. The placentas are sometimes separate; sometimes they have run together, and become one.

Twin children are generally smaller and thinner than others; still, however, the combined weight of

the two is always greater than that of a single one. The two children may be of both sexes, but more frequently they are of the same. The growth of one is often behind that of the other. If one child dies during the pregnancy, it may be cast off, and the other may be retained and go on developing. Sometimes the dead child remains along with the living one, and then it generally becomes shrivelled up and flattened (*see* § 198).

§ 330.

The signs of a twin pregnancy are very deceptive.

The midwife may suspect a twin pregnancy when, on external examination, she finds the womb unusually distended, and when, at the same time, she feels part of the child and its movements at too great a distance from each other for them to belong to one child, and when she can hear the distinct sounds of a child's heart in two opposite places. The great distension of the womb may be caused by a very large child, or by an excessive quantity of waters. A very large child would be recognised by the unusual size of its various parts (*see* § 304), whilst with twins the different parts are notably small. In excess of waters, the womb is uniformly distended and elastic, and the different parts of the child are less distinctly felt (*see* § 315). It is only after the birth of the first child that the midwife can tell with certainty that a second is present. The small size of the child, in comparison with the size of the womb during pregnancy, has already caused suspicion that a second is to come. This ceases to be doubtful when, upon laying the hand upon the womb, the midwife still finds it unusually large, when she again feels the different parts of a child, and when, examining internally, she feels a second fruit-bladder.

§ 331.

In twin pregnancies the labour not unfrequently comes on before its time. As a rule, both children

lie in the same direction within the womb, one above, and before or behind the other. Frequently the head presents in both, or it may be the breech; or one presents the head and the other the breech. Cross-births are especially met with with the second child. Their origin is plainly favoured by the sudden emptying of the womb at the birth of the first child.

The labour whilst the first child is being born generally goes on slowly, for the reason that the great distension of the womb is usually the cause of feeble pains (*see* § 209). After it is born the pains are generally absent for a little while. Twenty-four hours, and even more, may pass away before they return, but the interval is generally shorter. When the pains do return, the birth of the second child is generally completed rapidly.

The after-births are generally expelled after the birth of the second child; in exceptional cases, however, the first child is followed by its own after-birth. After such a complete separation of the two sets of membranes, it may happen that the second child is born with its membranes entire.

In the after-birth period violent hæmorrhage is to be dreaded, partly because the bleeding surfaces are much greater than in a single birth, and partly because the already weak contracting power of the womb may easily be exhausted by the double labour.

One of the most unfortunate occurrences in twin labour is the presentation of parts of both children at once. This may happen when both are contained within one amnion, or when the second set of membranes ruptures before the first child is born, as, for example, when the trunk of the first child is born and the head of the second enters the pelvis before that of the first.

§ 332.

In general, the mortality both to mothers and children is somewhat greater in twin births than in single ones.

Even before the labour, the nutrition of the mother suffers more than in single pregnancies (*see* § 55). The pressure of the more greatly distended womb upon the neighbouring organs causes increased difficulties. Not unfrequently a disease of the kidneys is set up, which manifests itself by swelling of the face and hands, and which may set up general convulsions (*see* §§ 190, 257). To these are added the often tedious labour, severe hæmorrhages in the after-birth period, and sometimes also in the childbed period.

The children are specially endangered through their development being generally less perfect than in single pregnancies. Moreover, as the womb is much diminished in size after the birth of the first child, premature separation of the placenta may easily take place. Finally, the dangers that general convulsions bring with them have already been spoken of (*see* § 257).

§ 333.

If the midwife believes in the early part of the labour that she has discovered the presence of twins, she will do well to inform a medical man, even if she can discover no other irregularity. One must certainly be called in if any symptoms that foreshadow general convulsions show themselves, or if portions of both children present, or even enter the pelvis together.

If, after the birth of the first child, the midwife has ascertained that there is a second present, she should at once tie the mother's end of the navel cord as well as the other, so as to avoid any possibility of the second child bleeding to death, as the two children may have but one placenta.

She should not tell the patient suddenly, but inform her by degrees, that there is a second child.

Even if some hours elapse after the birth of the first child, and the pains do not return, the midwife

should do nothing to bring them on, but should limit herself to looking after the comfort of her charge. But if the second child should have a faulty position, or should any thing special—such as hæmorrhage—come on, she must insist on a medical man being called in. Even if no disturbances have shown themselves in either mother or child, this must be done if after six hours' waiting the pains do not return.

Whilst the second child is being expelled, and afterwards, the midwife must keep a particularly sharp eye on the contraction of the womb.

In all cases she must mark which child has been born first, as first-born children often have special rights.

The after-birth belonging to the first child generally comes into the vagina, but the midwife should not make any attempt to take it away until she can feel the point of insertion of the second navel cord behind the genital fissure.

If, as sometimes occurs in exceptional cases, after the expulsion of the first after-birth, the second child is born with its membranes entire, she should, of course, rupture them immediately, so that the child can get air.

§ 334.

Births of more than two children at a time are very rare. Triplets occur only once in about eight thousand cases. Four or five children at a birth are much rarer still. That more than five can be borne at one birth has not been proved. The prospect of keeping the children alive is very small; at the most, occasionally one of triplets survives. The midwife proceeds as in a case of twins.

SECTION III.

IRREGULAR AND UNHEALTHY CONDITIONS OF MOTHER AND CHILD IN THE AFTER-BIRTH PERIOD, AND IN THE HOURS IMMEDIATELY FOLLOWING LABOUR.

CHAPTER I.

IRREGULAR AND DISEASED CONDITIONS OF THE MOTHER.

1. *Irregular Discharges of Blood from the Genital Parts.*

§ 335.

All discharges of blood from the genital parts, after labour, which do not come in gushes, but, on the contrary, are steady and uninterrupted in their flow, are irregular and demand medical aid, even although the bleeding may not be excessive at the time.

The most frequent cause of such an uninterrupted flow of blood is *an insufficient contraction of the womb after the birth of the child*, in consequence of which the open mouths of the uterine blood-vessels, at the spot where the placenta was attached, are not closed as usual (*see* § 85).

This imperfect contraction is principally observed in those cases in which the power of contraction has been exhausted by a long and difficult labour (*see* § 247), or in which it has been but feeble from the commencement; for example, in consequence of excessive distension of the womb from too much waters, twins, etc., particularly when under such circumstances the midwife has extracted the partly born child without any assistance on the part of the mother; and also when too violent pains have emptied the womb rapidly and suddenly (*see* § 207). The labour may, however, have been perfectly regular. In many women, flooding comes on after the birth of every child.

§ 336.

Sometimes the womb does not properly contract immediately after the expulsion of the child, but remains

large and soft. More frequently it relaxes later on—one or two hours after the birth of the child, and after the after-birth has come away, although it may have contracted well at first. By stronger pressure there is a slight and temporary contraction, but the hardness soon disappears when the pressure is taken off. The womb may be relaxed to such a degree that it is scarcely recognisable by the hand. The more imperfectly the womb contracts, and the more it is already separated from the placenta, the greater is the loss of blood. It is sometimes so great that the effects of loss of blood show themselves within a few minutes: blanching of the face and lips; fainting and frequent yawning; noises in the ears, dimness of sight, nausea, vomiting, coldness of the limbs, restless tossing to and fro and throwing about of the limbs, anxiety, sighing breathing; finally, deep faints, with complete loss of consciousness. The danger to the patient is then very great. *But a flooding that is slight in itself may be dangerous from its long continuance,* and its important effects may suddenly show themselves in surprising strength. [I have never seen a patient die from post-partum hæmorrhage that vomited, and I am therefore inclined to look upon it as a favourable symptom.]

§ 337.

In some cases, notwithstanding the womb is large and soft, there is no hæmorrhage, nor any change perceptible in the appearance or condition of the patient. In such a case the placenta is not yet separated, and no hæmorrhage makes its appearance until stronger pains have come on and separated the placenta.

§ 338.

More frequently, however, when the womb is not well contracted, the absence of an outward flow of blood is *caused by some block in the mouth of the womb*, such as a large blood-clot, or the completely separated placenta, *which keeps the poured-out blood in the cavity*

of the womb. Internal hæmorrhage is dangerous in the extreme, for the amount of blood may be very great, and, as it increases, the contracting power of the womb becomes less and less. Usually for a little while before this the blood had been flowing steadily, and then it has stopped, although stronger pains have not come on. Unless this condition is recognised in proper time, the womb may become distended by the pent-up blood to a high degree. Sometimes the patient feels a sharp and painful dragging in the pelvis; and on the midwife examining internally, she finds a large blood-clot in the vagina, and cannot reach the mouth of the womb. At the same time those consequences of loss of blood that have been mentioned show themselves.

§ 339

When the midwife knows that a patient has a tendency to flood after labour, she should earnestly advise her to call a medical man in to the coming labour, from the commencement.

But above all, the midwife must avoid everything during the labour that can favour the coming-on of flooding afterwards. For this reason she should not suffer her patient to bear down too early, and thus exhaust her strength in vain; still less should she encourage her to do so (*see* § 209). After the birth of the head, she must strive to prevent the headlong expulsion of the trunk (*see* §§ 208, 316); she must avoid completely extracting the half-born child hastily without the co-operation of pains (*see* § 114); and, finally, when the contracting power of the womb has been weak from the commencement, or when it has been exhausted by a lingering, difficult labour, or when the violent pains give rise to a fear that the womb will be emptied too suddenly (*see* § 335), she must watch the uterine contractions with particular care all the while the trunk is being expelled, and for some time afterwards (*see* § 113).

After the birth of the child, the patient should be placed carefully on her back, and care should be taken to keep her as quiet as possible, the thighs lying straight out and close together, so that the formation of clots may not be disturbed by movement, as by these the openings of the bleeding vessels may be closed up. With all this, she must be watched with the utmost care, lest the dreaded hæmorrhage come on without being noticed.

§ 340.

As soon as the midwife discovers that blood is flowing from the genital parts, *not in gushes, but with a steady, continuous flow, she must call in the nearest medical man as quickly as possible.* In the meantime she must bestir herself to excite stronger contractions of the womb, for it is by these alone that the flooding can be stopped. For this purpose she seats herself by the side of the patient (who must keep flat on her back, as has just been stated), grasps the base of the womb with one or both hands, and at short intervals *rubs gently round and round, at the same time never ceasing to press the front wall of the womb against the back* with a steady, equable pressure. She need not be alarmed, and should not allow herself to be deceived, if this proceeding at first causes a more copious outward flow of blood, as this is only the result of a general and more powerful contraction of the womb, that is now driving the blood that has been already poured into its cavity out of it again. She must rather continue to keep up this pressure for hours together, until the medical man comes, or until she has gained her object. She can assist in attaining this object very materially by allowing a skilled assistant to take her place in grasping the womb, whilst she herself injects hot water, 110 to 115 degrees Fahr. (*see* § 166), into the vagina, against and into the mouth of the womb.

The midwife must never allow herself to be led astray into attempting to stop the hæmorrhage by plugging

the vagina, as this will only stop the *outward flow* of the blood, and only turn an external hæmorrhage into an internal.

If the after-birth has not yet come away when the flooding sets in, the midwife, as soon as her treatment has succeeded, and the contracted womb is noticeably diminished in size, must see from time to time whether it has become separated in the interval, and come far enough down in the vagina to be taken away. Until the after-birth is away, the complete stoppage of the flooding is not to be expected.

§ 341.

Wherefore, if the means above mentioned have not been successful in stopping the bleeding, and the continuance of it brings the woman's life into danger, the after-birth must be separated and removed artificially. This is always a difficult operation, which is best performed by the hand of a medical man; but if the greatness of the danger does not allow of waiting for one, the midwife must proceed to do it herself, using the needful caution. She proceeds in the following manner:—

Before commencing, she should place a cushion under the patient's hips, so that the genital parts may lie high and free. She should then seat herself again by the side of the patient, and holding the navel cord a little on the stretch with one hand, she should pass the other, well oiled, into the vagina, and along the cord into the mouth of the womb, the same as for turning. She should then let go the cord, and support the base of the womb from without with the hand thus set at liberty. If she finds a portion of the placenta already separated, and lying in the mouth of the womb, she should push her hand carefully upwards between it and the uterine wall, so that the back of the hand is turned towards the inner surface of the womb, and carefully peel off the remaining attached portion of the placenta with the little-finger-side of the hand, follow-

ing every movement of this hand by corresponding movements of the hand that supports the womb externally. If she has separated the placenta completely, and then feels that the womb contracts strongly, she withdraws the after-birth (completely encircled with the hand) out of the womb into the vagina, and through the genital fissure,—slowly and carefully, however, to avoid tearing the membranes, perhaps still partially attached. But if the womb still remains relaxed after the separation of the placenta, she should rub it gently with the back of the hand, at the same time making use of pressure in the opposite direction by means of the external supporting hand until pains come on.

More frequently the midwife finds the separated portion not yet descended to the mouth of the womb. If the hand now passes into the womb, it finds itself in the emptied cavity of the *ovisac*, and everywhere separated from the internal surface of the womb by the smooth-feeling membranes. Under these circumstances, she should then try to find out, through the membranes, at what spot the edge of the placenta is already separated, and having found it, here push her hand, carrying the membranes carefully before it, between the placenta and the womb, separating the one from the other in the manner above described. If she proceeds in this very carefully, and the membranes are not very easily torn, she may complete the separation, *from within the ovisac*, without her hand coming into contact with the inner surface of the womb at all.

The after-birth, thus artificially removed, must always be kept till the arrival of the medical man who has been called in, even when she believes that everything has been brought away, and that neither any part of the placenta nor of the membranes has been left behind (see § 122).

§ 342.

If the midwife has conscientiously followed the instructions laid down, she will generally be able to avoid

an internal bleeding (that is, the collection of a large quantity of blood in the uterine cavity), or at any rate to recognise it as it is formed. She must in such a case immediately remove the blood-clots out of the vagina and womb by passing in two fingers, or if need be the whole hand. If she finds the mouth of the womb blocked up by the separated placenta, she passes the hand beyond it, and presses it slowly into the vagina and through the genital opening, at the same time pressing upon the womb from without with moderate force. After she has removed the hindrances to the flow of the blood from the vagina and mouth of the womb, the case must be treated like one of external hæmorrhage. But here she ought not to confine herself to the milder measures of treatment, but at once inject hot water into the womb.

§ 343.

Even after the after-birth has come away, and the midwife has succeeded in bringing the flooding to a standstill, she should not cease her watchfulness. The patient must continue to lie flat and at perfect rest for some time, and avoid every movement. The midwife, with her hand on the patient's abdomen, should keep watch over the womb, which usually has a tendency to become again distended, and from time to time examine the napkin that has been placed before the genital opening, to see what quantity of blood is coming away. Until the after-pains set in, and the heat of the body is restored, the bleeding may easily come on afresh. If the patient is very weak, the midwife should give her broth, or water with yolk of egg, sugar and cinnamon, a little at a time, also one or two tablespoonfuls of wine or brandy diluted with water. In such cases a medical man is always indispensably necessary; and the greater the weakness, the greater the necessity for one.

§ 344.

The cases are very rare in which a steady and con-

tinuous loss of blood is met with after labour, with the womb at the same time contracted. If the case has been one of placenta prævia, it may arise from imperfect contraction of the lower segment of the womb, the spot where the placenta was attached, whilst the whole of the upper portion is well contracted and hard (*see* § 183). But when the placenta has been properly situated, the cause of the irregular loss of blood is then to be sought in injuries to the genital passages during labour. The hæmorrhages from lacerations of the womb and vagina have already been spoken of (*see* §§ 234, 252, 253); hæmorrhage from lacerations of the perinæum will be discussed later on.

2. *Delayed Separation and Expulsion of the After-birth.*

§ 345.

As a rule, the after-birth is cast off within an hour after the birth of the child. A longer retention is an irregularity, and may be caused—

1. By a faulty (too weak or irregular) contraction of the womb.

The womb is larger and softer than usual. There is always some irregular hæmorrhage associated with it as soon as a part of the placenta is separated at the edge. The hæmorrhage is not unfrequently considerable (*see* § 336). If the whole of the placenta is separated, the bleeding is generally less, as the womb can then contract more uniformly; and these contractions, although they may be too weak to expel the after-birth, are still strong enough to check or entirely stop the flooding.

2. By spasm of the womb.

The parts about the internal mouth of the womb are generally the seat of the spasm. On examining internally, the midwife sometimes feels a corner of the placenta, by the side of the cord, projecting through the contracted part. The contractions are painful; the patient complains of a sharp dragging in the sacrum;

the womb does not harden uniformly; the part near the spasm feels drawn in and harder than the rest, and is tender to the touch; there is, moreover, considerable hæmorrhage generally, as the upper part of the womb contracts only imperfectly. But even when the flooding is moderate, the collapse of the patient is often so great, in consequence of the violent pain, that she gives you the impression of one dying of hæmorrhage.

3. By a too firm attachment of the placenta or membranes to the womb.

This is but a rare occurrence. It is never more than in patches that the placenta is too firmly united to the womb by sinewy bands. In such a case, although regular after-pains are present, and the womb contracts powerfully, the placenta only separates partially, and does not come down into the mouth of the womb. Every contraction is attended by great pain; the womb at the same time feels unusually hard and knotty; a more or less sharp bleeding comes on in gushes. Sometimes the after-birth is only kept back by a too firm union of the membranes with the womb; in that case the placenta may be completely separated, and may even have come down as low as the mouth of the womb.

§ 346.

Retention of the after-birth, or even of a portion of it only, is an exceedingly important matter. At first repeated, often violent, hæmorrhages may be feared. To these are added the dangers that are associated with decay of the retained portion. By these, serious diseases may be set up in childbed, which may easily have a fatal ending.

§ 347.

If no very great amount of flooding is present, and no unusual accident occurs, the midwife may quietly await, for an hour or two, the expulsion of the after-birth, when, however, she ought to follow conscien-

tiously the instructions previously laid down (*see* § 120). *She must avoid all rough pulling at the mouth of the womb, or dragging at the cord.* She might cause hæmorrhage, spasm, or even an inversion of the womb, by these proceedings. *Neither should she permit the patient to try to expedite matters herself by forcible voluntary bearing-down, intentional coughings, or blowing into the hands.* If at most two hours have elapsed, and the after-birth is still retained, she must cause a medical man to be sent for, earlier, indeed, if the hæmorrhage is serious, or any untoward accident has occurred. Until his arrival, if the pains are plainly feeble, she must endeavour to excite them by the means mentioned above (*see* § 340). If spasms are present, however, she ought not to make use of cold injections: she should then confine her attempts to bringing on equable contractions, to gentle rubbing of the womb with the warm hand; laying hot cloths on the lower part of the patient's abdomen, if violent hæmorrhage does not forbid; and letting her drink a cup of very hot camomile tea. She may also give her twelve to fifteen of Hoffman's Drops on sugar.

§ 348.

Only where there is flooding that cannot be stopped in any other way, the continuance of which threatens the life of the patient, is the midwife herself to separate the placenta. (See § 341.)

It is very bad if she meets with a case in which the attachment of the placenta is so firm that it cannot be separated from the womb without force. Nothing remains then to the midwife but to leave the attached piece in its place, and scrape away the separate parts from around this with the finger nail, and remove them. *After every such difficult separation of the placenta, she must call in a medical man, and show him the after-birth.*

If the midwife finds the internal mouth of the womb closed up on account of spasm, she should not use any

force, but *leave the separation of the placenta until the spasm has passed away.*

In the same way she should not attempt the separation if, after a premature labour, the canal of the neck of the womb is unusually narrow. If a more copious hæmorrhage comes on in such a case, a hot water injection into the womb is generally sufficient to stop the bleeding and bring about the expulsion of the after-birth.

3. *Inversion of the Womb.*

§ 349.

One of the most unfortunate, but happily one of the rarest, occurrences after labour is inversion of the womb, in which the base of it sinks down inwards. It may sink in so far that the womb is actually turned inside out, and the base and body of it come out through its mouth. The inverted womb, if the vagina itself is inverted also,—that is, if it falls down inwards,—may even fall through the genital fissure. Such an inversion can only take place, *so long as the womb, after the birth of the child, is wholly or in part relaxed*, if the base of it is then drawn down by pulling at the cord, or more rarely by pressure from above, by violent bearings-down and pressure on the part of the patient herself. If an inversion once begins, it mounts to a higher degree rapidly; but it does not always do so, and it may stay at the stage of simple depression of the base.

As a rule, the midwife, by conscientiously following the teaching laid down, will be able to avoid an inversion. If in cases in which the pain has been too strong, or the quantity of waters too great, she does her best to prevent the womb emptying itself too rapidly (*see §§ 207, 208, 315, 316*); if she does not extract the half-born child too rashly (*see § 114*); if throughout the labour she has any reason to fear that the womb will be relaxed after the child is born, and

she carefully watches the uterine contractions as the trunk is being expelled, and for some time after (*see* § 339); if she avoids dragging at the cord when it happens to be looped round the child's neck, or when it is too short (*see* §§ 112, 323), and carefully avoids pulling at the after-birth before it is in the vagina, she may confidently hope never to meet with such an unfortunate occurrence in her practice. [My own conviction is that inversion of the womb is always caused by *partial* attachment of the placenta. Part of it hangs down into the cavity, and part remains adherent. The womb, in its efforts to expel the placenta, contracts, grasps, and drags it down, and the part of the womb to which it is attached is thereby drawn down after it into the uterine cavity. When once the process of inversion has begun, every contraction of the womb carries it a step further, until at last total inversion takes place. The womb is turned completely inside out. It is only in this way that a polypus of the womb can cause inversion, and a placenta partially attached acts in the after-birth period precisely the part that the polypus does when it produces inversion; of course dragging at the cord, in trying to remove the placenta, will increase the danger of inversion.]

§ 350.

Usually with the inversion a rapid loss of blood takes place, as a portion of the after-birth is almost always detached. To these is added violent and painful bearing-down in the pelvis. Soon symptoms of collapse set in; the patient grows pale and cold, sickness, fainting, and convulsions set in, and *without speedy help life may soon be lost*, partly through loss of blood, partly from collapse from the violent impression of pain, that the dragging and jamming of the descended parts within the mouth of the womb give rise to.

Even at the first threatening appearances the mid-

wife must lay her hand upon the patient's abdomen at once. If an inversion of the womb is present, she will find the base of it dented in, or in the higher degrees of it, no trace of the womb will be felt. On examining internally, she feels a large, globular, firm, and tender tumour in the mouth of the womb, or in the vagina, or she even sees a dark bluish-red bleeding substance, to which, as a rule, the partly detached placenta is still adhering. The hæmorrhage in complete inversion is sometimes less than in the lesser degrees of it.

§ 351.

Considering the extreme danger the patient is in, *the nearest medical man should be called in as quickly as possible.* In the meantime, in order to lessen the pressure of the entrails upon the pelvis, let her place the patient on her back, with the hips raised, the upper part of the body lowered, and forbid the least pressing and bearing-down. If the inverted womb is lying outside the genital opening, let her take hold of it with both hands (well oiled), and try, the same as in a case of simple falling of the womb, to push it back into the vagina. (*See § 156.*) If it is lying in the vagina, or has been brought back there, it should be *kept there by gentle pressure with the fingers.* By placing her finger upon the separated portion of the still adhering placenta, and pressing it against the womb, she not only avoids an immediate irritation of the latter, but *moderates the bleeding at the same time.* If the pressure is not enough to do this, she takes cloths dipped in hot water and presses them against the womb.

If the signs of collapse are very urgent, a little wine or brandy and water should be given.

4. Rupture of the Perinæum.

§ 352.

Even after supporting the perinæum with every care

(see § 111), the midwife, under some unfavourable circumstances, and especially in women bearing their first child, will not always be able to prevent a rupture of it; although therefore a ruptured perinæum is not always a matter for which the attendant can be justly reproached, yet under all circumstances the midwife would be very blameworthy if she overlooked one, or intentionally sought to hide one.

§ 353.

Every deeper rupture of the perinæum during labour is an occurrence much to be lamented. The bleeding from the wound is indeed generally trifling, and even more copious hæmorrhages may generally be quickly stanchèd by hot water applications. But as the wounded surfaces heal up, they rarely grow together without an artificial union, and an irregular opening is left which often causes great inconveniences, especially falling of the vagina and womb. The higher the rent reaches up the vagina, the worse it is. If it reaches into or nearly to the seat, the woman loses the power of keeping in liquid motions and wind. Those cases are very rare in which the perinæum is torn in the middle, whilst the genital and anal openings remain uninjured.

If there is any want of care, a bad inflammation may easily be set up in the perinæal wound, made filthy by lochial discharge and urine, which may have bad consequences even though the injuries may be but slight.

§ 354.

It is therefore the duty of the midwife to examine the perinæum carefully after every labour (see § 121), and to *call in the assistance of a medical man in any case of deeper laceration*, as the above-mentioned injurious consequences can only be avoided by artificially uniting the two wounded surfaces at once. The further treatment is then left to the decision of the medical

man. Still let the midwife note the following rules for the treatment of slighter ruptures. The patient should lie exclusively on her side for several days, without moving her thighs from one another, in order that the wounded surfaces may remain as near each other as possible, and that the lochial discharge may run off forwards. She should not even turn herself from one side to the other, but be carefully lifted round whenever she is obliged to turn. The wounded part is to be kept as clean as possible by frequent washings with warm water, done so as not to give pain. If the edges of the wound and the genital folds swell much, they should be fomented with camomile-tea. It is well if the patient do not have her bowels opened till the fourth or fifth day; but from this time the midwife must keep them open by daily injections.

CHAPTER II.

APPARENT DEATH OF THE CHILD.

§ 355.

The child is said to be apparently dead if, after it is born, although alive, it does not exhibit the usual signs of life,—it neither cries, nor breathes, nor moves in any other way, or at most makes some few feeble attempts to breathe. The heart still beats, however, as the midwife may partly see and partly feel with the hand laid on the chest; frequently the navel cord is still beating, at any rate in that part of it that lies nearest the navel. For the rest the midwife must look on every child as apparently dead that is born without the signs of life, and treat it as such, so long as it does not exhibit the plain signs of softening, such as peeling of the outer skin (*see* § 198), or putridity.

§ 356.

The causes of apparent death are the same as those that cause actual death during labour, but in the latter

case they are either in action longer or more violently. All apparently still-born children have been in danger of suffocation during labour. From this cause the mouth and nasal openings are generally found to be blocked up with discharge from the genital passages of the mother, in consequence of too early attempts to draw in breath; frequently also the surface of the body is covered with *meconium* (see § 311); otherwise the children exhibit various appearances. Those that are far gone look white, with light blue colouring of their lips; the limbs hang down lifeless. If they are not so far gone, the face is often of dark red or blue-red colour; the limbs are firmer and less flaccid.

§ 357.

In every case *the midwife must immediately make attempts to restore animation*, as in most cases the child's life can still be saved by proper treatment.

The first thing to be done is to excite respiratory movements (to make the child breathe).

If the mouth and nostrils are blocked up with slime, meconium, etc., they must first be cleared out, so that air can enter the lungs freely. Let the midwife therefore empty out the nostrils by carefully squeezing them, and clean out the cavity of the mouth by passing the little finger of the right hand far in, and then drawing out the collected mucus. (Of course the finger must not be soiled with blood, etc., whilst being used.) This must be done directly the child is born, lest the first attempts to draw the breath drive the mucus, which is often tough, deeper into the larynx and air tubes, and perhaps produce complete closure of them.

In the slighter cases of apparent death, gentle rubbing of the breast, repeated blowing on the child's face, and sprinkling it with cold water, are often enough to restore breathing.

If these means are not sufficient, the midwife must cut the cord, as more vigorous means for restoring animation can only be put in force after the child is

separated from its mother; and after the blood has ceased circulating in the placenta, it is of no further use to the child to keep up the communication between them. If the child's countenance is very red or blue-red, and swollen, the midwife should let one to two tablespoonfuls of blood flow from the child's end of the cord before tying it up. She should first tie the cord a good handbreadth from the navel, so that if blood-letting shows itself necessary, there will be room to cut it through again. Later on she can tie it again, and cut it off closer to the navel.

§ 358.

The most important means of restoring animation is a warm bath, which must, however, cover both breast and body of the child completely, whilst the employment of all other means must be still proceeded with; and the water must be constantly kept at the proper heat by carefully pouring fresh water in. The midwife must take care that it is not made too hot; and to guard against this, it should always be tried with the bare elbow as well as with the hand. Midwives may easily make the mistake of preparing the bath too hot.

In the bath the midwife gently rubs the child's breast and back, sprinkles the face and chest with quite cold water, and drops either this or cold brandy from a height upon the pit of the child's stomach, which she afterwards warms again in the bath; she brushes the soles of the child's feet with a brush; from time to time she lifts the child out of the water, and smacks it, not very hardly, on the buttocks with the flat of the hand, or swings it once or twice up and down with both hands, or dips it for a moment up to the neck in a vessel containing cold water, and then puts it into the warm bath again directly.

§ 359.

If no respiratory movements follow, it is a sign that

the child is so nearly dead that it has no power of breathing, that its nerves do not respond to the stimulus of unpurified blood, and so do not set the respiratory apparatus in motion, and the midwife must commence artificial respiration without delay—that is, by turns expand the chest, so that the air can enter it, and then press it in, so as to expel that which has become useless. (*See § 8.*)

This does take place to a certain extent if, when the child is in the bath, one hand is placed under its back, and the chest is raised, whilst the head, pelvis, and arms fall back, and then afterwards the child is bent forwards, and the chest gently compressed at the same time.

The following is, however, the more effectual method. The midwife takes hold of the child by the shoulders in such a way that the thumb of each side lies on the front of the chest, the forefinger runs from behind into the armpits, and the three other fingers lie along the back in a slanting direction, whilst the head is supported in the hollow of the two hands. Then fixing herself with the legs somewhat apart, and the upper part of the body bent forwards, she thus holds, with arms hanging down before her, the limp and motionless child, bearing in mind that the child's chest is not to be compressed by the grasp, but that its body should just rest by its two armpits on her two forefingers. Without delay she then, with her arm still extended, lifts the child out of this hanging position so far upwards that the end of the child's trunk falls gradually by its own weight, whereby the weight of the child now falls on the thumbs, which are extended over the front of the chest.* By this falling of the child's pelvis over the belly, the contents of the chest are so strongly compressed, that the fluids that have entered through the mouth and nasal openings, and collected in the air passages, are ex-

* The child's face is, of course, turned *towards* the operator.

pelled. The midwife keeps the child in this position as long as fluid escapes; when all has come away, she allows the child to fall back to its previous position, for by this movement the chest is freed from all pressure, and allowed to expand, and air rushes through the larynx into the lungs, often with a distinctly heard noise. After a few moments the midwife swings the child upwards again, and repeats this raising and lowering of the child for perhaps four to six times, one after the other; and afterwards the child is again put into the warm bath, and the results of the operation noticed. In case of necessity, the operation is repeated one or more times. If she hears air entering the chest as it is being held upwards, she should lower it immediately, and put it back into the bath, so as not to disturb the respiration that has now begun.

There is still another way in which the midwife can produce artificial respiration. She places the apparently dead child on its belly, supporting the breast on a cloth, and the head on the arms folded underneath it. After some moments she turns the body slowly on to its side, and a little over, and by this movement the chest is expanded so that air forces its way in. After this, she turns the child back quickly to its former position, and at the same time makes gentle pressure and some friction over the spine, to help to expel the air and the fluids that have collected in the air passages. She repeats this movement perhaps ten or twelve times, turning the child sometimes towards one side and sometimes towards the other, and then puts it back into the bath, to take it out again after a little while and again begin the rolling movements if necessary.

§ 360.

All these attempts at restoring animation must be conducted by the midwife, not in a too excited and hurried manner, but calmly and cautiously, and the

result of each plan waited for, for some little time, before beginning a fresh one. She must particularly avoid disturbing the restored respiratory movements of the child. One of the principal things is always the proper warming of the child, and this is best done by the warm bath. As life returns more and more, and the breathing becomes deeper, quicker, and more regular, as the skin reddens, and the child opens its eyes and moves its limbs, the midwife must confine herself more and more to keeping the child warm in the bath, at the same time gently moving and rubbing the limbs. She should not look upon it as completely restored until it has cried out vigorously. The nearer to actual death the child has been, the more is an illness to be feared after it is restored, and medical assistance desirable.

§ 361.

If all the means of restoration have been employed with care, and all without result, and the limbs become more lifeless still,—if the lower jaw drops more and more, and the inside of the mouth gets colder,—then, when the midwife has seen that the navel cord is properly tied, let her wrap the child in warm cloths, leaving only the face free; let her then lay it in a warm place, and look from time to time to see if any signs of returning life make their appearance.

SECTION IV.

IRREGULARITIES DURING CHILDBED.

§ 362.

It is true that the midwife can give but little advice in the sicknesses of lying-in women and new-born children; still it is well for her to know something of the commonest and most dangerous illnesses, so that

as far as possible she may do her best *to keep them off*, or, if they have already set in, that she may recognise them early, and more earnestly *urge the calling-in of a medical man*. If she should notice anything out of the way in either mother or child that is not mentioned in the Handbook, it is of course understood that a medical man must be consulted about it.

I. DISEASES OF LYING-IN WOMEN.

CHAPTER I.

DISEASES OF LYING-IN WOMEN IN GENERAL, AND PUERPERAL FEVER.

§ 363.

Every lying-in woman, even the healthiest of them, is more disposed to sickness at this time than at others, so that she requires more consideration and attention than usual. (*See* § 128.)

Many of the diseases of lying-in women are the direct results of harmful influences to which they have been subjected during the labour. The midwife can often ward off sicknesses by carefulness in the management of the labour, and by conscientiously following the instructions laid down.

Prolonged duration of labour may be particularly mentioned as one of the harmful influences that a woman in labour may be subject to, and which may disturb the course of childbed, especially if the waters have been discharged prematurely (*see* § 211), or if, in addition, the genital passages have been exposed to more violent bruising than usual, either from narrowness of the pelvis (*see* § 247), or from some irregular position or dip of the advancing head (*see* §§ 265, 269, 274), or from cross-birth (*see* § 295). The midwife will frequently be in a position, here at least, to diminish the threatened danger, by avoiding a too early

rupture of the membranes; by rectifying a faulty position of the child in time, by placing the patient in the proper position; and, above all things, by not delaying too long to call in a medical man.

The more serious injuries also of the genital passages, which often bring life into instantaneous danger, such as ruptures of the womb or vagina (*see* §§ 232, 233, 235, 250), can be avoided in many cases by artificial aid, if applied at the proper time; and, on the other hand, the midwife herself can frequently prevent rupture of the perinæum, which may likewise prove dangerous in childbed (*see* § 353), by her own care and watchfulness (*see* § 111).

Another cause of danger in childbed is any considerable feebleness of pains after the expulsion of the child, even after the first danger (that depending on the violent hæmorrhage) is past, for the patient has been more or less weakened by loss of blood; the womb is then easily relaxed again, and not sufficiently diminished in size. In consequence of this faulty contraction, secondary hæmorrhages set in, which are indeed hurtful in themselves, but become still more so if the blood that is poured out remains within the uterine cavity, here becomes clotted, and under the influence of the air from without becomes putrid. In the period of expulsion, therefore, the more conscientiously the midwife keeps at a distance, or avoids everything that may cause, such feebleness (*see* § 339), and the more carefully she watches over the diminishing size of the womb during childbed (*see* § 129), the more rarely will she have to complain of illness arising from this cause among her patients.

A like danger, and in a still higher degree, threatens the lying-in woman if portions of membrane or placenta have remained within the womb after labour, partly because they prevent the womb from contracting properly, and thereby give rise to floodings, and partly because if they remain in too long, like the blood-clots, they become putrid. (*See* §§ 168, 346.) If the mid-

wife will follow strictly the rules laid down, she will generally be able to prevent any pieces of membrane or placenta from remaining behind. In any case she must not overlook such an occurrence, and on her own part must make use of the means she has at hand to prevent further danger, and lose no time in seeking the medical aid that is so urgently needed.

It is very unfortunate, finally, if, after the escape of the waters, the dead child itself becomes putrid, and the labour now lingers (*see* §§ 199, 312); but here also the midwife may prevent worse consequences by at once procuring medical assistance, and in the meantime striving to protect the maternal parts from injury from the destructive influence of the putrid discharges by the diligent use of cleansing injections.

§ 364.

By far the most dangerous diseases of lying-in women are brought about by matter or putrid material from without, being carried by the hands or instruments of the midwife on to some raw surface within the genital passages of the mother, most frequently about the neck of the womb. For these diseases the midwife is responsible. It is her first duty to pay the most scrupulous attention to the cleanness of her hands and instruments before going to a labouring or lying-in woman. (*See* §§ 96, 97.) She must take care not less conscientiously that only perfectly well washed cloths and napkins are used for the patient, and also that they are changed sufficiently often. (*See* § 130.)

§ 365.

A third cause of illness is imprudence on the part of the patient herself. Errors in eating and drinking, getting cold, mental disturbances, delay in relieving the bladder and bowels, errors in suckling the child, getting up too early, may all cause more or less serious disturbances. It is the business of the midwife from the commencement to assist her charge with good

advice with regard to these things, and, as far as she is able, to see that it is followed. (See §§ 128, 137.)

§ 366.

Lying-in women, as a rule, easily become feverish; for example, a slight mental disturbance, or an accumulation of fæces, may sometimes set up fever. If the breasts are not sufficiently emptied, an attack of feverishness often comes on about the third or fourth day, in consequence of the painful distension they undergo (so-called milk-fever; see § 127). Fever in a lying-in woman, however, the midwife ought never to take lightly; for, as a rule, it depends on some diseased state of the genital parts, and especially of the womb, and is the sign of some serious illness, which may easily be dangerous, and often proves rapidly fatal. These serious febrile illnesses of lying-in women go by the name of *childbed* or *puerperal fever*.

§ 367.

The fever generally begins with a shivering or "shake," followed by a hot stage, and sometimes sweating. The midwife is generally able to detect the fever already by the burning skin and quicker pulse. The thermometer, however, gives the most accurate assurance, particularly as to the degree of the fever, and its use should never be omitted. She will often find the temperature of the body raised considerably (to 103° or more in the armpit). The more violent the fever is, the more unwell the patient generally feels; she cannot eat, but, on the other hand, drinks a great deal, complains of headache, and her sleep is restless. Many patients declare at the commencement, however, notwithstanding the fever, that they are quite well, and complain at most of thirst and of the head feeling full and hot. Generally speaking, the earlier the fever comes on after labour, and the more violent the shake at the commencement, the

more dangerous it is. A frequent return of the shake is also a bad sign.

§ 368.

Besides the fever, other signs of illness soon make their appearance.

The patient often complains of a steady persistent pain in the lower part of the belly, which is made worse by every movement, by drawing in the breath deeply, or coughing; and this pain soon spreads over the whole abdomen. The more violent this pain, the more distended does the abdomen feel, and sometimes it will not bear the slightest touch. Frequently vomiting and diarrhœa set in later on. In other cases the pain is less, and limited to the womb, or one or the other broad ligament; the rest of the abdomen is soft, and not tender to the touch. There are cases of serious illness in which the patients do not complain of the least pain, and in which firm pressure only causes a feeling of pain.

The lochial discharge is rarely what it should be: the flow is scanty, or there is none at all; or it may be copious but offensive—stinking. If there have been wounds of the perinæum, the genital folds, or genital fissure, these take on a bad discoloured appearance. Even if there have been no wounds, ulcers occasionally form on the external genitals.

Often, but usually later on in the course of the disease, a painful swelling of the thigh comes on, which may spread over the whole leg, and occasionally over both legs at once, or one after the other.

In any serious illness the milk dries up, sometimes later, sometimes earlier.

Consciousness often remains to the last moment; often, however, towards the end, deafness and delirium come on. The earlier this happens, the more dangerous the case is.

§ 369.

Even if there be no other appearances of illness in a

lying-in woman, if fever comes on and remains more than five or six hours, or if it is very violent and has commenced with a severe shake, and the temperature has reached 104° , or if, independently of fever, other signs of illness are present, such as pain in the abdomen, tenderness on pressure, irregularities in the lochial discharge, etc., it is the duty of the midwife to insist at once on a medical man being called in; for the earlier assistance is procured, the more effective it is, and the time for rendering assistance that will do any good often vanishes very quickly in these cases.

Until the arrival of the medical man, the only thing the midwife has to look after is that there should be the greatest possible cleanliness everywhere. (*See* §§ 130, 131.) Let her see that the soiled clothing is changed carefully as often as is necessary, and removed from the room; she should cleanse the ulcers that may be found on the external genitals, and open the windows as far as the time of the year permits.

For the rest, it is the duty of the midwife to undertake the care of a lying-in woman suffering from illness no longer than is indispensably necessary, and at once insist upon another attendant being called in. If she has visited a patient suffering from puerperal fever, she must take off all her clothes every time, and carefully purify everything that has been used about the patient, particularly her hands (*see* §§ 96, 97), before going to another labour or lying-in patient.

CHAPTER II.

SOME OTHER DISEASES OF CHILDBED.

1. *Painful After-pains.*

§ 370.

These very rarely make their appearance in first labours, but do so more frequently and persistently in

subsequent ones, particularly if the labour has run a very rapid course. With many women extremely painful after-pains come on as soon as the labour is over. More frequently they are brought on by the child sucking. If they are very violent and of long duration, they disturb the patient's health, and rob her of her needful sleep. They are distinguished from the pain produced by inflammation of the womb, etc., by the facts that they are exactly like labour pains, and, like them, come and go; that in the intervals between them the womb is not tender to the touch; that the lochia are regular in their flow, and that there is no fever.

For the relief of these, the midwife should frequently apply very hot cloths or warm dressing to the patient's abdomen, and let her drink a cup of warm camomile-tea. If these means do not bring quick relief, or if the pains continue with undiminished severity, advice should be sought from a medical man. The midwife should not forget that painful after-pains may easily pass into an inflammation of the womb. As soon as the belly shows itself tender to the touch between the pains, and fever sets in, she should at once insist on a medical man being called in.

2. Swelling and Inflammation of the External Genital Parts.

§ 371.

After a long labour, particularly if the vaginal entrance, the genital folds, or the perinæum have been injured, the external genital parts not unfrequently swell, inflame, and become painful during childbed. The midwife should employ lukewarm fomentations over the swollen parts, and see that the greatest cleanliness is observed (*see* § 130). If the pain and swelling do not disappear quickly, or if fever comes on, she should call in a medical man.

Frequently, even without previous injuries, ulcers

appear on the inner surface of the genital folds, which may spread some distance into the vagina. They are principally found in those cases in which, before the labour, there has been a watery swelling of these parts. Usually along with these the lochia are very offensive. Let the midwife here call in a medical man immediately. In the meantime she should bathe the ulcers several times a day with lukewarm water or camomile-tea (*see* § 130), and after every bathing push a soft linen pledget soaked in oil in between the genital folds.

3. *Hæmorrhage from the Womb.*

§ 372.

Hæmorrhage from the womb during childbed is to be looked upon as irregular either if it is unusually violent during the first days,—the blood coming away in clots of greater or lesser size,—or if it persists after the usual time. These hæmorrhages are mostly the consequences of imperfect contractions of the womb, which is larger and softer than it should be at this part of the childbed period. In very rare cases, the spot where the placenta was attached is the only part paralysed, and it is then drawn down into the cavity by the contraction of the remaining parts of the womb, so that in case the spot can be touched from the outside a depression can be felt in the womb.

More frequently, some remnants of membrane or placenta are attached to the inner surface of the womb, and prevent its uniform contraction.

By proper care and watchfulness, the midwife will very often be able to prevent the occurrence of such hæmorrhages (*see* § 363). If they do come on, she should let a medical man be called in early, and if the hæmorrhage has been severe, treat the case according to the rules which have been given for the treatment of flooding immediately after labour (*see* §§ 340, 342, 343).

§ 373.

Sometimes displacement of the womb, mostly backwards, is a cause of persistent hæmorrhage in childbed, but as a rule it is not very considerable (*see* § 374).

More frequently, improprieties on the part of the patient are to be blamed: sitting up in bed too early, straining at stool, getting up too soon, etc. Such women are to be kept in a resting posture; they should not leave the bed, or if already up, they should return to it. If these measures do not arrest the bleeding soon, or if it continues violent, or if it appears that one of the afore-mentioned causes is in play, a medical man must be called in.

4. *Displacements of the Womb.*

§ 374.

Retroversion, or falling of the womb backwards, during childbed, occurs most readily in those women who have already suffered from it before, or in the beginning of, pregnancy (*see* § 149); but it does not by any means always return after the birth of the child if the patient does as she ought to do (*see* § 137). On the other hand, childbed itself is often the cause of its first occurrence. The softer and more flaccid the womb is as it is returning to its ordinary size, and the deeper it sinks into the pelvis withal, so much the more readily may it *gradually* fall backwards if the patient lies quietly on her back, or *suddenly*, from too violent abdominal pressure, as when straining at stool.

But from its very softness and flaccidity, and the yieldingness of its supports, the symptoms of its occurrence are mostly insignificant, even in cases of its sudden advent, and the patient rarely complains of more than a disagreeable tenderness and pressure within the pelvis, or difficulty in emptying the bowels or bladder. But more frequently these displacements are the cause of a moderate hæmorrhage persisting beyond the ordinary time (*see* § 373).

If the midwife knows that a patient has suffered from a falling backwards of the womb previous to pregnancy, or in the beginning of it, she will do well to refer her to a medical man, early in the childbed period, in order that he may be able to take the proper steps to prevent a return of the malady. In any case, one must be called in as soon as any of the above-mentioned disturbances show themselves, and examination discloses such a displacement.

§ 375.

We have already spoken of prolapse of the womb and vagina in childbed, and of the duties of the midwife in connection with them, particularly if the womb descends through the genital fissure suddenly, in consequence of physical exertion (*see* §§ 154—156). Women who have suffered from prolapse before pregnancy should be advised to consult a medical man during childbed.

5. *Disorders of the Bladder.*

§ 376.

We have already spoken of the retention of urine that not unfrequently comes on in the first days of childbed, and of the method of dealing with it (*see* § 135). If the retention comes on at a later period, it points to some special disease, about which a medical man must be consulted at once.

§ 377.

A far worse symptom is an involuntary flow of urine. The midwife recognises it by the urinary odour of the bed and chamber of the patient. The genital and neighbouring parts will also soon become raw and tender. Such an involuntary flow of urine is sometimes observed after difficult and tedious labours, and depends either on paralysis of the neck of the bladder, or more frequently on a wound of some part of it.

Paralysis of the neck of the bladder is generally

noticed directly after labour. In this affection the urine flows off through the natural opening of the urethra; the paralysis is rarely so complete, however, that the urine dribbles away constantly. On the other hand, a certain degree of weakness, in which the urine mostly comes away in the regular manner, and only involuntarily in consequence of some sudden abdominal pressure, such as in laughing, sneezing, etc., is nothing uncommon. This weakness of the neck of the bladder soon disappears of itself; but if there is actual dribbling away of the urine, it is indispensable that a medical man be called in at once.

If an injury to the bladder be the cause of the urine being passed involuntarily, it is only exceptionally that it comes on immediately after the birth of the child: it usually makes its first appearance on the fourth or fifth day afterwards, sometimes even still later, when a slough, that has formed in consequence of the bruising of the parts during labour, has separated, leaving an opening in the wall between the bladder and the vagina, or more rarely the neck of the womb. In such a case, all the urine generally escapes through this opening into the vagina. Sometimes, however, if the body is kept in a suitable position, small quantities may be retained in the bladder and passed voluntarily. In such a case a medical man is always to be called in immediately. [Such an involuntary flow of urine is very frequently only the overflow from an over-distended bladder, and the midwife should in every case at first ascertain whether the case before her is not one of this kind. If it should prove to be so, it must be treated according to the rules laid down in § 135.]

6. *Disorders of the Bowels.*

§ 378.

A tendency to confinement of the bowels is the rule in lying-in women. The treatment for such a condition has already been given (*see* § 136).

Diarrhœa is often present in the course of puerperal fever (*see* § 368).

When diarrhœa makes its appearance without fever, it is generally through some error in eating or drinking; more rarely, in consequence of a chill. If it is repeated many times, a medical man must be consulted. In the meantime, the midwife must recommend caution in the choice of food—warm, mucilaginous drinks, and generally to keep warm, and in bed.

§ 379.

Pain in passing a motion is often caused by piles. Piles are distended and swollen blood-vessels, situated either under the lining membrane within the bowel, or outside round the margin of the seat, where they form a knotted red or blue-red swelling. Piles are often formed during labour, and swell up in the childbed period, causing great pain. The midwife must take care to keep the bowels gently and easily open by mild injections (without the addition of salt). If the piles are outside, she should dress them frequently with zinc ointment, spread on linen, or soft warm poultices. If the pain is not soon relieved under this treatment, she must call in the aid of a medical man.

If the motions are passed involuntarily, it is in consequence of deeper injuries to the perinæum, which have extended to or into the seat (*see* § 353). These consequences can only be prevented by an early artificial union of the wounded surfaces. If this is delayed, a medical man will at any rate have to be called in now.

7. *Affections of the Breasts.*

§ 380.

In order to prevent the so-called milk-knots and inflammation of the breasts in a woman that is intending to suckle her child, the midwife must take care to have it put to the breast at the proper time after its birth, and to each of them regularly five or

six times a day. She must protect the breasts from cold and pressure by a proper covering (*see* § 132), and strive to shield the patient from all mental disturbances. If hard knots do form, however, and become painful, with swellings of the breasts, the midwife must insist on a medical man being called in. She must take care in the meantime that her patient exercises moderation in eating and drinking; she must see that the bowels are kept open by injections; she must try to lessen the swelling of the breasts by rubbing in warmed oil, or by the frequent application of the warm vapour of an infusion of camomile; they may be covered with lint, or a dry, light, and soft cushion of camomile and elder flowers, and supported by a cloth passing over the opposite shoulder. Emptying the breasts by letting the child suck occasionally can only be of service in the commencement, whilst the pain is slight. If the inflammation progresses, the irritation of sucking will be injurious, so the child should not be put to.

§ 381.

Women who do not intend to suckle their children should eat and drink but little, and from the second day have an injection daily, in order to restrain the flow of milk to the breasts. The midwife should at the same time cover the breasts with an herb cushion, tow, or wadding, and support it by a bandage. If the distension should be too great, however, she should try to lessen it by gentle friction with warm oil, or the frequent application of the steam from an infusion of camomile (*see* § 380).

The midwife should proceed in the same manner with women who are weaning their children, after the childbed period, if any such seek her advice. Overdistension of the breasts is best avoided by weaning the child very gradually. If the distension reach too great a height, the patient should be advised to keep her bed for a few days, as the uniform warming of the

body, and the resting position of the arms, will be beneficial.

§ 382.

Soreness of the nipples is a great torment to suckling women, which may even compel them to wean their child. It is the most frequent cause of inflammation of the breasts, for the reason that the mother, for fear of the pain that always attends the putting of the child to the breast, will not do it, whereby the milk collects in the breasts. Many women have such a tender and easily wounded skin that neither the most careful preparation of the nipples during pregnancy (*see* § 69), nor the faithful following of all the instructions laid down for putting the child to the breast, and for keeping the breasts and the child's mouth clean (*see* §§ 132, 144, 145), will be able to protect her from this affliction. It occurs the more easily in proportion as the nipples are small, and the child has more trouble to take hold of them. Here it will be well to draw them out with a breast exhauster before putting the child to.

There are observed on sore nipples either simple, flat, skin-deep sores, or deeper, penetrating cracks and fissures. Frequently one side of the nipple has suffered more than the other. Sometimes the nipples at first sight appear healthy, but if they are bent a little on one side, a deep fissure is discovered at the base, by which it may be almost separated from the breast. The deep cracks and fissures especially cause suckling women the most violent pain when the child is being put to. Fever is not unfrequently added to the above.

These sores are very difficult to heal up, as the child is constantly sucking them open. The nipples are naturally all the more irritated and pulled about, when putting the child to, if the mother cannot make up her mind to press it to well at once, but starts back first several times, whereby the child seizes only the tip of the nipple. The midwife should put the child to rather

less frequently than usual, but still regularly, in order to guard against an injurious accumulation of milk and the formation of milk-knots. The mother may make use of a nipple shield of india-rubber, or, better still, of prepared cow's udder, by which the pain will be lessened, and the healing-up assisted. [I should recommend that a glass or wooden nipple shield, with an india-rubber teat, be used, and that the child should not be permitted to take the breast without it until the sores have healed. If this plan be adopted, the kind of dressing for the sores will matter little, as they will soon heal up if tugging and dragging at them by the child be prevented.] If the sores are mostly on one side of the nipple, it is sometimes useful to put the child to the breast for a while in the opposite way to what it is usually fed in; that is, to put it to the breast in such a way that its legs are directed outwards. After the child has sucked, the nipples should be washed clean with some brandy and water, and covered with a shield, which may be cut out of a potato or a carrot, and often changed for another. Simple pads of lint, dipped in fresh water, may also be applied; they should be kept constantly wet, however. If the affection does not improve rapidly under the treatment, a medical man must be consulted.

II. *SOME DISEASES OF NEW-BORN INFANTS.*

§ 383.

Children bring many diseases into the world with them. These are either imperfections which have their cause in some disturbance of their development within the womb, or they are the consequences of some injurious influences to which they have been subjected during their birth.

The midwife should examine the child thoroughly after its first bath, and note particularly whether its urethra and seat are unnaturally closed up; and if this is the case, medical assistance should be sought at

once (*see* § 118). She will not often be made aware of closure of the urethra at once, however, but will generally find it out later on, by observing that the child does not wet itself. Closure of the bowel also remains unrecognised at the first inspection if the external opening of the gut is regularly formed, and the closure is higher up in the bowel. In such a case no *meconium* is passed; and if the stoppage is of longer duration, the child gets very restless, the belly becomes distended, and hard and tender to the touch.

If a child does not wet its napkin within twelve hours, or if after the lapse of twenty-four hours no *meconium* has been passed, and there is nothing but a fruitless straining (*see* § 140), the midwife may look on the case as one of stoppage of the urethra, or of the gut, and insist on a medical man being called in at once; for in such a case the life of the child is in great peril, and if, as a rule, it can generally be saved, it can only be by prompt surgical aid.

§ 384.

A less important fault of development is too short a tongue ligament, in consequence of which the child sucks with difficulty. In the meantime, however, this is often wrongly taken to be the cause why a child cannot suck. More frequently the fault lies in weakness of the child, or smallness of the nipples, or want of skill in putting the child to the breast. A child can only properly be said to be "tongue-tied" if it cannot put the tip of its tongue out as far as the lower lip, and if on movement a depression comes in the middle of the tip. In order to compel the child to open its mouth, the midwife has only to press the nostrils together. If she finds that the child is really "tongue-tied," she must procure the advice of a medical man.

[There would not be much talk of children being "tongue-tied" if the "malformation" were not called by a name of such tripping sound. As the ligament

is capable of almost indefinite stretching, the operation of cutting it is scarcely ever, if ever, called for.]

Some of the imperfections of development of new-born children, which are at once observed, have been already described (*see* § 307).

§ 385.

Amongst the visible effects of labour which remain on the child, the most frequent is the scalp tumour. Like the birth tumours of other parts, it requires no special treatment; but should it not disappear in the first few days, or should another tumour form in the same place, generally on one of the parietal bones, the midwife must call in a medical man, as it will then generally be a so-called "bloody tumour" of the scalp. This tumour originates in an escape of blood under the membrane covering the bones. With such a tumour the colour of the scalp remains unchanged; it forms a soft, rounded-off elevation; it gives a feeling of fluctuation, and all round it a hard sharp ridge is perceived under the skin.

In those cases in which the pressure of a narrow pelvis has caused more serious injuries to the head (*see* § 247), a medical man will generally have been called in on account of the difficult labour. If this has not been the case, one must be called in at once, as a medical man may sometimes be able to ward off the evil consequences of such injuries (*see* § 400). Neither must the midwife treat simple contusions of the scalp too lightly if, in consequence of its having been subjected to great or long-continued pressure, a scab has formed; for after the scab has fallen off, an ulcer remains behind, from which, under unfavourable circumstances, a dangerous inflammation may extend over the surrounding parts.

§ 386.

The more conscientiously the midwife follows the rules laid down for the management of new-born

infants (*see* §§ 143 to 147), and the more accurately her directions are followed, the more certainly may she hope to keep a healthy and vigorous child in good health. In order to know when a child is ill, and in need of medical aid, let her bear in mind the following indications.

§ 387.

1. Every child is to be considered dangerously ill that will not take the breast for a long time if it has previously done so with eagerness.

§ 388.

2. In like manner, every child is to be looked upon as seriously ill that shows particular restlessness, sleeps little or none at all, and cries continually, without any one being able to recognise hunger (*see* § 145), or some disagreeableness caused by pressure of the clothes, a wet napkin, etc., as the cause. The more ill the child is, the more is its voice likely to be changed; it becomes more whimpering day after day, and in case of very severe illness the child loses its voice altogether. If at the same time the skin feels hot, the midwife may suspect that the child has some kind of fever. Its breathing also in such a case is generally rapid or irregular.

§ 389.

In any serious illness the child always loses flesh, often very rapidly; its face fails, it ceases to grow, and rather gets thinner. Generally also evident symptoms are present of disturbance of digestion.

If the child suffers from constipation, its bowels will be open less frequently than usual, scarcely once in the twenty-four hours. If the motions are harder and drier, so that the child is in pain whilst passing them, and strains a great deal, the midwife may try to procure some relief by giving an injection of camomile-tea, with a little oil and sugar; and to get rid of the flatulence, she may also give the child some teaspoon-

fuls of camomile-tea, until the medical man gives further directions. If the constipation lasts longer, the belly of the child becomes hard, distended, hot, the child has bellyache, and draws its legs up. When a child is in this state, not a moment is to be lost in procuring medical assistance.

§ 390.

If the child has diarrhœa, its motions are frequent, they are thin, watery, or slimy, and mostly of a bad colour, greenish-whitish, sometimes like chopped-up eggs. In this case the child generally has bellyache, as in constipation. The danger is generally greater, as the child's strength is more quickly exhausted from the loss of its juices. For this reason the midwife must call in a medical man immediately. In the meantime, should the child seem in great pain, she should lay a cloth, dipped in hot camomile-tea, and carefully wrung out again, round its body. She should specially try to find out if there has been any fault in feeding the child that is in her power to remedy; if the mother has suffered from any fright, fit of anger, or anxiety; or if she has been living on improper, indigestible food; or, if the infant has been brought up without a mother's or wet-nurse's milk, whether the milk has come from diseased cows (*see* § 147), if it is sour, etc. If the child has been brought up by hand, it is generally best to take away the milk completely for twenty-four hours, and in place of it to give, for example, thin pigeon broth with a little Gries* in it.

§ 391.

Vomiting is often present also. For an otherwise healthy child that has fed too hastily, or taken too much, to throw up a portion of its food now and then (unchanged if rejected immediately, or curdled if it

* Gries is a coarsely ground flour, made from almost any kind of grain, for which semolina or pearl hominy would be a suitable substitute.

has been down some little time) is of no importance ; but if this vomiting or rejection of its food is repeated often, or if the stuff thrown up smells very sour, or if there is at the same time diarrhœa, or if the child is restless and evidently in pain, the danger is not small, and speedy medical aid is indispensable. Here also the midwife should try to discover any possible error in the diet, and if there be any, try to rectify it. Children that are brought up by hand should as a rule be kept from milk entirely for twenty-four hours.

§ 392.

It is of course understood that the permission granted to the midwife in the preceding paragraphs to give a sort of preliminary advice under certain circumstances does not in any way free her from the duty of seeing that a medical man is called in as soon as she observes the child showing any of the symptoms described above.

The midwife ought not to give a sick child a bath without the approval of a medical man.

§ 393.

Amongst the visible and therefore more easily recognised diseases, the following are specially mentioned.

Scald—rawness.—This comes in all the folds of the body, behind the ears, on the neck, under the arms, most frequently in the groin, in the folds between the thigh and the genital parts, on the genitals, and round the seat. The skin looks much reddened, raw in patches, and moist, or studded with little specks or blebs. This rawness is only the consequence of neglected cleanliness and care. Healing of these up is not to be thought of without diligent cleansing of the affected parts, and regular change of soft, clean linen, particularly in the night as well. The healing-up will be encouraged if the midwife will frequently pour cool

water over the sores, then dry them carefully, and cover them with clean lint. If actual ulcers make their appearance, or if swelling and hardness show themselves in the parts affected, medical advice is to be sought.

§ 394

Thrush.—In this disease a kind of mould forms in the mouth of the child, on the tongue, on the inner surface of the lips and cheeks, and on the gums and palate, in the form of little white creamlike patches, bordered by reddened membrane. This affection is generally attributable to want of cleanliness, through the child's mouth not having been properly cleansed after sucking. (*See* § 144.) For if this is not done, portions of the milk remain on the mucous membrane of the mouth, and undergo an acid fermentation. The midwife should try to remove these creamy patches by means of a cloth dipped in water, or wine and water, or with a hair pencil charged with the same mixture, and take care that for the future the child's mouth shall be carefully washed out as often as it has sucked. If the thrush spreads, if sucking causes the child evident pain, if associated with these there are fever, diarrhœa, or vomiting, a medical man should be called in at once.

§ 395.

Inflammation of the eyes.—This dangerous disease may also be generally avoided by punctually following the instructions given for protecting the eyes during and after the child's birth. (*See* §§ 113, 117, 143, 144.) It usually comes on during the first few days. Almost always only one eye is affected at first. The eyelids swell, and remain firmly closed on account of the great abhorrence there is of light; when they are opened, a thick matter oozes out in abundance. *Medical aid must be speedily procured in order to prevent blindness*, and the midwife would deserve punishment who would delay only a few hours to call in a medical man.

In the meantime, until his arrival, she should keep applying linen pads soaked in ice-cold water. They should never be allowed to become dry, and should therefore be frequently renewed. Besides this, the eyelids should be carefully opened every two hours, so that the matter that has collected may escape; then cold water should be poured over the eyes, over a wash-basin, and the face then carefully dried with a linen cloth. The linen that has been used should be immediately washed in clean water. Great care must also be taken lest some of the matter get into the midwife's own eye, and the disease be thereby carried to it. Such caution is all the more needful as this inflammation of the eyes is particularly dangerous in grown-up people.

§ 396.

Bleeding at the navel.—Bleeding from the stump of the navel cord, coming on in the first few hours after labour, is always the result of want of care in tying the cord. (See § 115.) It should be tied afresh immediately. More frequently, a little dried-up dark blood is noticed on the removal of the binder during the first few days after the stump of the cord has fallen off. Such a slight bleeding from the navel wound, which has been injuriously affected by the friction of the binder, is not dangerous; yet must the midwife go to work carefully when she changes the binder, and in every case use a pledget smeared with oil over the wound, instead of a dry one. *Any active bleeding from the navel wound, however, is a highly dangerous occurrence, which requires prompt medical aid.* In the meantime the midwife must endeavour to stop the bleeding, after the manner taught in the case of the navel cord being torn off during labour. (See § 324.)

Ulcer of the navel.—If the navel wound does not heal over in the usual way, an ulcer making its appearance at the spot instead, it will here also be necessary to call in a medical man.

Rupture of the navel.—If the midwife finds, after the navel has healed up, that a rupture has formed, as often is the case with children who have cried a great deal, she should early recommend the procuring of medical advice.

§ 397.

Swelling of the breasts.—Sometimes hard lumps show themselves soon after birth in one or both breast glands, in boys as well as girls. The midwife should be careful not to squeeze them, as has often been improperly done; she should rather try to protect them from pressure. If the breast swells more, and becomes tender, let her rub in gently some warm oil, and cover it with wadding or lint. If the skin above it is red and hot, it may be expected to gather and break, and a medical man should be consulted.

§ 398.

Jaundice.—This is distinguished from the yellow colouring of the skin, mentioned before, which is often seen in healthy children in the first few days after birth (see § 142), not only by the more decidedly yellow colour, but also by there being at the same time symptoms of disturbed digestion.

A vesicular rash, of minute watery blebs, that occasionally makes its appearance soon after birth, and then generally on the soles of the feet and the palms of the hands first.

Erysipelas.—This begins with redness and swelling of the skin, generally between the navel and genitals, but also on other parts of the body, and it either remains limited in extent, or spreads gradually over a great part of the body.

Watery swelling (Wassergeschwulst).—This generally first appears as a doughy or hard swelling on various parts of the body—on the legs first usually, when the skin becomes yellow or bluish, or occasionally of a striking white colour.

All these diseases are highly dangerous, and require medical assistance at once.

§ 399.

A disease which may also be very dangerous in new-born infants is catarrh. It is caused by keeping the child in cold, damp air; by the legs getting cold through being wet with urine if the napkin is not changed often enough; by the action of the sunbeams on the mucous membrane of the nose, wherefore it comes on not unfrequently when children are taken out of doors on sunny spring days without sufficient protection.

The first symptoms of catarrh are frequent sneezings; a clear discharge flows from the nostrils; they become partially blocked up, so that the child breathes with a snuffling sound; it sleeps with its mouth open. So long as the child can suck well, however, no danger is usually present; but if it cannot, the danger increases rapidly. For this reason the midwife should urge the calling-in of a medical man in every case of catarrh. If she observes that sucking is a trouble to the child, she should take it off the breast for a time, and give the milk with a spoon.

§ 400.

Convulsions, Lock-jaw, Tetanus.

Sometimes general convulsions come on, even in the first few days after birth, in consequence of injuries sustained by the head in its passage through the pelvis (*see* § 385).

Lock-jaw makes its appearance later, generally between the fifth and tenth days. The blame is often to be attributed to too hot a bath. The child cannot move its jaws, nor open its mouth; it can neither suck nor swallow. Every attempt to get the finger in the mouth, or to feed the child, increases the spasm, or brings it on afresh. Frequently the whole body is attacked with tetanus, or violent convulsions of the

limbs accompany the attack. Touching or moving the body invariably brings on an attack, or aggravates one that may be present.

A child suffering from the convulsions that come on during the first days of life can often be saved if medical aid be speedy. Lock-jaw generally ends in death. In either disease, however, the midwife must insist on a medical man being called in at once.

APPENDIX.

On the Administration of some Medicines.

§ 401.

The midwife is not allowed to administer any medicines internally, independently (*i.e.*, without the advice of a medical man), with the exception of the following.

She is allowed to carry Hoffmann's Drops with her, and to administer them as a stimulant in case of great exhaustion from loss of blood (*see* § 169), principally for the reason that other so-called stimulants, such as wine, brandy, etc., are not always to be procured at the moment. In such a case, she may give twenty drops in water, or on sugar, and repeat the dose. In the painful crampy pains of the after-birth period, if no violent hæmorrhage is present, she may give twelve to fifteen drops on sugar.

Among the internal medicines, the use of which is permitted to the midwife, are also the infusions of aromatic flowers, herbs, or seeds, the so-called teas, such as camomile, elder, linden-flower, peppermint, and fennel-tea. These teas are prepared by pouring about ten times the weight of boiling water over the flowers, herbs, etc., then letting it stand for some time, well covered up, and then straining off through a fine sieve or through a linen cloth. The midwife makes use of camomile-tea more frequently than any, as in spasmodic pains, hysterical convulsions, and painful after-pains; she should never give more than one or two cupfuls, however. If there is fulness of blood, heat, or severe hæmorrhage, it should not generally be given.

Children suffering from flatulence, or pains in the bowels, may have a few teaspoonfuls of camomile-tea given them.

When such things as groats, linseed, or marsh-mallow are used, from which a mucilaginous liquid can be prepared, it is not sufficient to simply pour boiling water over them, but they must be stewed together for some time, and the liquid then strained off hot.

Materials that contain starch, such as starch and arrowroot, are first stirred up with a little cold water, and then, whilst the stirring is going on, a sufficient quantity of boiling water is poured in.

§ 402.

Outward applications are used by the midwife in various forms.

Dry, warm applications.—For this purpose she uses warmed cloths, pads of soft linen, stuffed with bran, rye-meal, or the above-mentioned aromatic flowers and herbs,—so-called herb pads.

Moist, warm applications, fomentations.—A towel or cloths folded together are dipped into hot water or a hot infusion of camomile flowers, etc., wrung out again, so that no more water runs off, and laid upon the affected part as warm as the skin will bear it, or the medical man has ordered it. The fomentation must be renewed before it gets cold. To prevent it cooling too rapidly, and thereby necessitating a too frequent change, it may be covered with oilcloth, or some other waterproof material, and a woollen covering spread over all. Flannels also, wrung out of hot water or camomile-tea, are proper for such fomentations if the skin of the part to be fomented is uninjured.

Warm poultices—warm dressings.—Poultices are generally made of oatmeal, rye-meal, linseed-meal, breadcrumbs, etc., prepared with hot water or hot milk. The poultice must be so thin that it will run

out of the spoon, and twice as much must always be prepared as is necessary for one poultice. It is then put into a linen cloth for use, and spread out so that it will completely cover the affected part. The two edges of the cloth are now turned upwards; when it is so far cooled that it can be held to the eye without any unpleasant sensation of heat, it is time to apply it in such a way that the side that has only the single layer of linen comes next to the affected part. To keep it from cooling too rapidly, it should be covered, as the preceding, with oilcloth or mackintosh, and over all with a thick woollen cloth. With this covering, it will be sufficient if it is renewed every hour; and for this purpose the remaining half of the poultice warmed up afresh will serve. In order to prevent the part getting cool when the poultice is being changed, the fresh one should be held in readiness before the old one is taken off.

Cold applications.—A folded linen cloth is dipped into cold spring water, or ice-water, and wrung out again. The applications must be frequently renewed, as they soon take in the warmth of the affected part.

Cold acts more powerfully if, instead of wet cloths, a pig's bladder or an india-rubber bottle is made use of, which, after the air has been expelled as much as possible, has been filled with snow, or half filled with pounded ice. Such an ice-bag should not be put directly in contact with the skin, however; a piece of cloth should come between them, lest the skin thus covered up freeze. It is refilled before the ice is completely melted, after the first water has been run off.

Preissnitz applications are cold applications that are covered with dry linen, oilcloth, or flannel, and remain on until they become warm ones. The midwife uses them under the direction of the medical man, who decides how often a change is to be made.

Mustard plasters are prepared by the midwife under the direction of the medical man, by stirring up

freshly ground mustard with warm (not hot) water, and then spread on linen or paper about as thick as the back of a knife. Such a mustard plaster is either placed directly on the skin, or after the mustard has been covered with a layer of muslin. It is allowed to remain on until it causes a very sharp burning, and the skin under it has become red; ten to thirty minutes are required, according to the tenderness of the patient's skin. Instead of mustard, horseradish can be used. For this purpose it should be grated and stirred up with hot vinegar. After the plaster is taken off, the skin should be washed carefully with lukewarm water.

§ 403.

In like manner, for external use, the midwife carries a solution of carbolic acid in olive oil with her (one part of carbolic acid to twenty-five of olive oil). She uses the carbolized oil for anointing the finger before making an internal examination, for oiling the tube for the seat before administering an enema, the vaginal tube for vaginal injections, the plugs of cotton for plugging the vagina (*see* § 166), as well as for thoroughly purifying the hands and instruments after using them. (*See* §§ 96, 97.)

§ 404.

In giving an enema, the midwife proceeds as follows. For an aperient injection for a grown-up person, she generally takes an infusion of camomile flowers, to which is added a tablespoonful of sweet oil and a teaspoonful of salt; for a soothing injection, camomile-tea and oil only; the same for an injection for a child, with at most a little sugar added. The camomile-tea must always be strained through a cloth, so that none of the flowers or stalks shall remain in the liquid. The injection must be of such a temperature that the syringe filled with the liquid to be

employed shall only feel agreeably warm when the eye is touched with it. The medical man often orders injections made of other materials also, for the preparation of which he gives the necessary directions.

The quantity of liquid required for an aperient enema, for a grown-up person, is from seven to twelve ounces; for an infant, about half that quantity. If warm water alone is used, without the addition of anything, the quantity required will be greater. If the injection is not to act as an aperient, but is to be retained for some time in the bowel, only half the usual quantity should be used.

The injection is most easily made if the patient lies on the left side, near the edge of the bed, with the thighs drawn up somewhat towards the abdomen.* Supposing the syringe filled with the liquid for injection, the nozzle should then be well oiled, and gently and carefully passed into the opening at the seat, in the same direction as the bowel—that is, a little backwards and to the left (*see* § 31). It should be passed in about two or two and a half inches. Care should be taken that there are no sharp bends in the tube, which would prevent the passage of the injection. If the flow is checked, and there is no sharp bend, the stoppage is probably caused by the mouth of the tube being blocked up by a fold of mucous membrane; the tube should therefore be withdrawn a little. When all the liquid has been injected, the tube should be slowly and carefully withdrawn. The apparatus should then be emptied and properly cleaned (*see* § 96). For an aperient enema to be effective, it is desirable that the patient should not empty the bowel again immediately, but retain the injection for at least a quarter of an hour. In giving a child an enema, it should be laid on its side, or on its belly, on the lap of an attendant. The nozzle of the apparatus should only be passed about three-quarters of an inch up the bowel.

* Here follows the method of giving an injection by means of the irrigator, an instrument but little used in this country.

§ 405.

For vaginal injections, simple water is most frequently used; the temperature of it is to be decided by the circumstances of the case. Cleansing injections should be made lukewarm; the midwife should therefore first try the temperature of the water on the eyelid, like as for an enema. On the other hand, when it is to arrest hæmorrhage, the water should be as hot as it is safe to use it—115° Fahr. Besides pure water, the midwife may make use of camomile-tea, or one of the mucilaginous liquids mentioned before, such as linseed-tea. The midwife is only permitted to make use of other things for injection by the special direction of the medical man in attendance, from whom she also receives the directions as to the method of giving them. Generally speaking, the midwife ought not to make injections into either vagina or womb in women pregnant or in labour without the permission of the medical man, except in those cases in which the Handbook expressly prescribes them. (*See* §§ 167, 168, 179, 183, 253, 312, 340, 342.) With lying-in women (*see* § 372), cases of flooding excepted, she must limit her activity to washing the external genital organs and the entrance to the vagina (*see* §§ 130, 369).

The patient is always placed on her back for a vaginal injection. The midwife should try to make the position comfortable, as these injections generally take a longer time to give. In order to prevent the bed from being wetted by the returning injection liquid, a bedpan should be put under the patient, or some other suitable vessel.

[*When the syringe is filled, and the vaginal tube fitted on over the ordinary nozzle of the apparatus, the forefinger of the left hand is passed into the vagina, and the vaginal tube glided along it until it reaches the mouth of the womb. If the injection is to be uterine, the vaginal tube is now passed through the mouth of the womb, and then slowly upwards until*

the base is reached. The midwife should never allow herself to squeeze the ball of the syringe forcibly under any circumstances; and if any other apparatus is used, care should always be taken to use the greatest caution in every part of the operation.]

§ 406.

For drawing off the urine, an instrument called a catheter is used. It is a round, slightly bent little tube, or pipe, of German silver (or gum elastic), provided with three small holes on each side a short distance from the end that is rounded off. This instrument, like all the rest, must always be carefully cleansed both before and after use (*see* § 96). When about to draw the urine off from a patient, the midwife should place her on her back in bed, with the sacrum somewhat raised and the thighs separated. It is best to put her on a bedpan, as she will thus be least likely to wet the bedding, either at the washing that must precede the use of the catheter, or afterwards as the urine is running off. The midwife, standing at the right side of the patient, separates the larger and smaller genital folds with the left hand. She then *sees* the opening of the urethra close under the clitoris. She must be careful not to mistake the one for the other. In order that she may not carry any of the mucus that clings to these parts into the bladder along with the catheter, and especially in the case of lying-in women, the finger should be gently pressed over the urethra from behind forwards to expel the mucus; the parts should then be cleansed carefully with a cloth dipped in warm water. She then takes the catheter between the middle and forefingers, placing the thumb over the outflow opening of the instrument, and having done this, she carefully passes it about an inch along the urethra, then dips the hand down towards the perinæum, and afterwards passes it onwards until she feels that the urine is flowing, whereupon she removes the thumb from the opening. Generally it must be

passed about an inch and three-quarters along the urethra, but sometimes as much as two inches and a quarter.

The midwife must be very careful at every step of this operation. As soon as she finds any stoppage, she must not try to overcome it by force, but pass a finger into the vagina to feel if the catheter is pressing up close to the symphysis pubis; for the obstruction is generally caused by some error in passing it, by the hand not being carried far enough backwards, the result being that the top of the catheter presses the wall of the urethra into the vagina. If she does not succeed after a careful attempt, she had better give it up, for fear of injuring the urethra, and call in a medical man.

In cases where some part of the child presses violently upon the urethra, or where this is pressed together by a womb that has fallen backwards, the midwife must try to move these parts away from the pubes by two fingers of the left hand passed into the vagina, after she has first passed the point of the catheter up the urethra. Sometimes the operation is rendered easier by placing the patient on her knees and elbows.

§ 407.

The midwife should only use leeches by order of the medical man. She must allow herself to be thoroughly instructed by him as to where they are to be placed.

In order to apply leeches, the midwife puts them in a small, dry glass, such as a cupping or wine glass, and holds them over the part which has been previously cleansed with warm water or milk, and also, if it can be borne, it may be moderately rubbed first. As soon as the leeches are sticking fast, she takes the glass away carefully, and with the finger loosens the lower end of the animal which has stuck to the glass.

But if the midwife has to apply a larger number of leeches to a flat part of the body—for example, the

belly, back, or thighs,—the following is the safest method of proceeding. She takes a piece of linen a little larger than the hand, and spreads ordinary sticking-plaster about a thumb-breadth round the edge of it. She lays this upon the part in question, sticks it fast, and lets it lie about a quarter of an hour. She then loosens one corner a little, pushes all the leeches under, and then closes the opening again. She removes them at a little under the hour. In this way no part need be uncovered long, and chills will be avoided.

Should a leech cause violent pain, as one sometimes does with children, it should not be pulled off, but a little salt should be sprinkled on it, when it will loose its hold.

If, and how long, the leech bites should bleed, the medical man decides. In order to keep up the bleeding, the midwife should frequently wipe the bites with a cloth dipped into warm water, so that the blood clotting over them cannot close them up. If there is a fear of keeping the parts uncovered too long, the object may be attained by covering them with warm poultices or fomentations.

To stop the bleeding from the bites, the midwife presses a piece of German tinder, or lint, on each of them until it sticks. If the tinder gets quite soaked through by the oozing blood, she should lay a second, larger piece on the top of it, and press it down, and if necessary a third and fourth piece, still larger, until the tinder is dried. If the midwife does not succeed in stopping the bleeding in this way, she must call in a medical man, but until he comes she should continue the pressure over the bites in the way described.

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